FLORA OF MIZORAM

VOLUME I
Ranunculaceae-Asteraceae

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BOTANICAL SURVEY OF INDIA
Ministry of Environment and Forests
The forests have been playing an important role in the socio-economic development of the people of the North-eastern region in general and Mizoram in particular. In fact, in Mizoram our lives are inseparable from the forests, as the people still depend largely on the forest resources for their various daily needs. The lush evergreen forests in Mizoram are bestowed with enormous plant wealth which is important not only for the economic well being of the people in the state, but also for the environmental security in the region. However, a sound scientific knowledge about proper identity of the plants, their habitat, distribution and utility for the local communities is essential in order to ensure the availability of these resources on long term basis to meet the needs and aspirations of present as well as future generations. I am glad to know that Botanical Survey of India, the premier research organisation mandated for survey and documentation of plant diversity of the country, through its Eastern Circle at Shillong, has done a commendable job in carrying out this onerous task in a professional manner.

The Flora of Mizoram, Vol. I, is first of the series, documenting various facets of the floristic diversity in the state. I am sure, the information contained in the book will be of immense use for various stakeholders of biodiversity in the state—the people, the scientists and the managers alike.

The editors and contributors deserve all praise for bringing out this exhaustive volume at a time when the environmental issues have become a major concern for the people and the Governments across the world.

Dated Aizawl,
14th June, 2001

(ZORAMTHANGA)
PREFACE

The last decade has witnessed the emergence of great awareness about the desirability of sustainable use of biodiversity and its conservation. But this is possible only through the availability of proper information on the identity of the elements of biodiversity, places of occurrence, distribution, habitat, ecology and utility for the local communities. In this context the importance of floristic studies need not be overemphasised. The Botanical Survey of India, whose one of the primary objectives is to document the plant resources of the country in the form of National, Regional, State and District floras, is actively engaged in this task since its reorganisation in 1954. The Flora of Mizoram is another important milestone in this direction at a time when the entire world is celebrating "International Mountain Year".

Mizoram, one of the seven sister states of the North-eastern India, lies in the southern most part of the region. The varied physiographic and eco-climatic conditions, met within the state, have adequately expressed itself by supporting a rich vegetation both in luxuriance and diversity. Located between Cachar district of Assam, Kuki hills of Manipur, Chin and Arakan hills of Myanmar and Chittagong hills of Bangladesh, the state displays a close floristic affinity with not only these regions but with other neighbouring and distant part of the world as well. Though the state has been botanically explored since 1899, no comprehensive floristic account on its plant resources is available till date. Besides, the changing concepts in the taxonomy of various families and genera over the last century have made most of the informations available in the Check-lists published by C.E.C. Fischer (1938) and Deb and Dutta (1987) obsolete.

To bridge the gap in our knowledge about its floristic diversity in the light of recent taxonomic studies, to update the existing information in conformity with the International Code of Botanical Nomenclature currently in vogue and as one of the basic mandate of the department, the present study was taken up in late nineteen hundred and eighties. It is largely based on the intensive and extensive collections made by two of the contributors (KPS & DKS) between 1988-1995, as well as those made by other scientists of the department and Dr. M. Sawmliana of the State Forest Department, Mizoram, and housed in the herbarium of Eastern Circle, BSI, Shillong (ASSAM). The
historical collections made by A T Gage, J E Leslie, Father Godfrey, Mrs. N Parry, Rev. W G L. Wenger, Rev. R A Lorrain, Lorrain Foxall, etc., housed in the Central National Herbarium, BSI, Howrah (CAL), and all relevant literature dealing with the plant resources of the state, were also consulted.

The Flora of Mizoram is proposed to be published in three volumes. The present volume, dealing with general chapters, like introduction, physiography, climate, geology and soil, forests and forest types, botanical studies, forestry, economic plants, floristic diversity, references, key to the families, etc. includes taxonomic account of 884 taxa belonging to 403 genera and 90 families from Ranunculaceae to Asteraceae. Of these 172 species and one variety have been recorded for the first time from the state. As southern and South-western part of the state still remains to be thoroughly explored, many more species are expected to be added in future.

It is hoped that the Flora will be useful to the forest managers, botanists, researchers and all those concerned with the study, conservation and sustainable utilisation of the plant resources in the state of Mizoram.

The contributors express their grateful thanks to the Principle Chief Conservator of Forests, Government of Mizoram and his staff for the facilities rendered during the exploration work. We also express our deep sense of gratitude and thanks to Dr. M. Sanjappa, Director and Dr. N.P. Singh, Dr. P.K. Hujra, Dr. B.D. Sharma and Dr. M.P. Nayar, ex-Directors, Botanical Survey of India for their constant encouragement during the course of the present work. Thanks are also due to Shri B.M. Wadhwa, ex-Deputy Director and Dr. V.P. Nair, formerly Scientist-in-charge, Eastern Circle, BSI, Shillong for the facilities and keen interest evinced by them. We also sincerely thank Dr. U.K. Mishra, Senior Geologist, Geological Survey of India, Shillong for providing useful information on the geology of the state, and Dr. T.M. Hymniewta, Deputy Director, Dr. G.P. Sinha, Scientist, Eastern Circle, BSI, Shillong, Shri B.P. Uniyal, Botanist, Northern Circle, BSI, Dehradun and Dr. J.H. Lalmamlinghinglova, Forest Department, Mizoram for their help in various ways.

The contributors express their thanks to all their present and retired colleagues and staff members of the Eastern Circle, Botanical
Survey of India, Shillong who have sincerely helped and cooperated during the progress and finalisation of this work, and to Shri K. Chandra Sekar, Shri Amit Chauhan and Shri Prashant K. Pusalkar, Junior Research Fellows, Northern Circle, Botanical Survey of India, Dehradun for their help in preparing Indices for the present volume.

We also express our sincere thanks to the staff of the Publication Unit, Botanical Survey of India, Kolkata, for their help and assistance in arranging the publication of this volume, and to M/s Shiva Offset Press, Dehradun for its quick printing in the present form.

K.P. Singh
D.K. Singh
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INTRODUCTION

The present state of Mizoram or Lushai hills, as it was known formerly, forms tongue shaped rugged mountainous region in the extreme southern fringe of North east India. It was called Lushai hills district during the British period and formed part of undivided Assam. It was renamed as Mizo hills district by the act of Indian Parliament in 1954, and continued to remain the part of undivided Assam till 1971. In 1972 (Anon., 1971), the Mizo district was accorded the status of Union Territory named Mizoram and finally attained full fledged statehood on February 20th, 1987 (Anon. 1986).

Geographically, the state is located between 21°57' – 24°30' N latitude and 92°15' – 93°29' E longitude, covering 21,081 sq. km of land area. The length of the state from North to South is about 277 km, while East - West width extends over 121 km. It has a long inter-state boundary with Assam (173 km), Tripura (66 km), and Manipur (95 km). Besides, Mizoram shares international borders on three sides, with Myanmar in the East and South (ca 404 km) and Bangladesh in the West (ca 306 km). It is surrounded in the North by the Cachar district of Assam, in the East by the state of Manipur, in the East-south and South-west by the Chin and Arakan hills of Myanmar and the western side by the state of Tripura and Chittagong hill tracts of Bangladesh.

The tropic of Cancer passes through the middle of the state (just South of the Aizawl town). Initially there were three districts in Mizoram. Aizawl in the North has an area of 12,588 sq. km, while central district Lunglei occupies 4,536 sq. km and southern most district of Chimpui extends over and area of 3,957 sq. km. Recently for administrative convinience, the Aizawl district has been divided into five districts, viz. Aizawl (with district headquarter at Aizawl), Aizawl North (with district headquarter at Kolasib), Aizawl East (with district headquarter at Champhai), Aizawl West (with district headquarter at Mamit) and Aizawl South (with district headquarter at Sherchip). Lunglei remained undivided, while Chimpui has again been divided into two district Chimpui East (with district headquarter Saiha) and Chimpui West (with district headquarter Lawngtlai). Thus, today there are total 8 districts in the state. The state has about 681 villages and three autonomous district councils, viz. Lai, Mara and Chakma in Chimpui district.
Map of North East India showing Mizoram
A view of tropical evergreen forest in West Mizoram

A view of Dampa Wildlife Sanctuary
A degraded landscape

A view of tropical evergreen forest in Dampa Wildlife Sanctuary
Patches of sub tropical forests alternating with Jhum fallows

A view of tropical vegetation near Variengte
A view of bamboo forest near Tamdil

A view of Tung [Vernicia fordii (Hemsl.) Airy Shaw] plantation near Tamdil
A view of Tamdil Lake

Coffee (Coffee arabica L.) plantation near Kolasib
Michelia champaca L.

Cleome speciosa Raf.
Mahonia pycnophylla (Fedde) Takeda.

Mesua ferrea L.
Saurauia nepaulensis DC.

Abelmoschus manihot (L.) Medikus var. pungens (Roxb.) Hochr.
Bombax ceiba L.

Semecarpus anacardium L. f.
Cordia dichotoma Forst. - a common medicinal plant
Crotalaria anagyroides Kunth
Derris robusta (Roxb. ex DC.) Benth.
Butea monosperma (Lam.) Taub.

Erythrina arborescens Roxb.
Bauhinia glauca (Wallich ex Benth.) Benth.
Saraca asoca (Roxb.) de Wilde

Acacia pennata (L.) Willd.
Acacia eburnea (L.f.) Willd.

Mimosa pudica L.
Rubus rosifolius Smith

Rubus alceifolius Poir.
Passiflora foetida L.

Coffea arabica L.
Alangium chinense (Lour.) Harms
Mussaenda roxburghii Hook. f.
Spilanthes calva DC.

Tithonia rotundifolia (Miller) S.F. Blake
Vernonia volkameriaefolia DC.
Physiography

Geomorphology

The geographical milieu of Mizoram has been discussed earlier in detail by S. Singh (1994). The state is a mountainous region and consists of seven, long, North-South traversing parallel ranges with intervening valleys. In fact, these are broken into innumerable small hills, locally called “Thang” with sharp and pointed hill tops. These look like hundreds of pyramids grouped together. The slopes are steep on all sides but much steeper in the West than the East and the average height is about 900 m above the mean sea level.

The terrain is immature and young and subject to continuous denudation in response to recent tectonism and other various exogenic processes. The landform in the state is the result of erosion in which the running water had played a major role from the very beginning (Anon., 1979). The major geomorphic elements observed in the area are both structural and topographic ‘high’ and ‘depressions’ ‘flats’ and ‘slopes’ sculptured on the topographic surface of Mizoram in a linear fashion. In Mizoram, the ‘depressions’ are in all cases in accordance with the normal first order structural elements, but the topographic ‘highs’ are recorded both in the structural ‘high’ and ‘depressions’. The physiographic expression of the state is imparted by approximately N-S trending steep, mostly anticlinal, longitudinal (Linear fashion), parallel to sub-parallel hill ranges and synclinal narrow valleys with series of parallel hammocks or topographic highs (in an aerial fashion). The ridges are highly dissected with the formation of deep gorges, spurs, keels and kools, which developed due to intensive erosion during the isostatic adjustment (Anon., 1974). In general, the western limbs of the anticlines are steeper than the eastern limbs. Faulting in many cases, produced steep faults scarp, especially along the steep dipping fault planes. The difference of elevation between valleys, floors and hill tops greatly varies from West to East, the range being 200 m to 600 m. The steep hill ranges are more towards East to West.

The major drainage pattern having different bifurcation ratios follow the N-S trending depressions and gorges in the low level topography, separated by high land topography in between them. The depressions and gorges, in most cases, are the physiographic expressions of the faults or other structural patterns. The tributaries and streamlets form ‘angular’
"sub-parallel" to "parallel" and "dendritic" drainage pattern and run both parallel and across the topographic depressions and highs. The slope of the streams are moderate. In some cases the main rivers are restricted within the comparatively soft shale horizons. The main drainage system in the area falls within the piedmont and straight reaches. The water holding capacity of the soil is low because of its clayey nature.

**Geology**

The general geology of the Mizoram state shows repetitive succession of Neogene (40-20 million years), arenaceous (sandy) and argillaceous (clayey) sediments, subsequently folded into a series of North-South trending, longitudinal plunging, anticlines and synclines. The Mizo hills are part of the folded belt of Tripura-Cachar-Mizoram and adjoining areas which in turn constitute a part of major Assam-Arakan basin. The generalized succession (from older to younger) of lithostratigraphic units in the state is as follows:

**Barail Group**: Mainly argillaceous, the Barail Group has monotonous sequence of shales within interband of siltstone and localised Micaceous sandstone. Oligocene in age, the rocks have low (3° - 15°) rolling dipsand, which have been folded into a broad anticline with the axis trending approximately East-West.

**Surma Group**: This group, Miocene in age, is represented by the Bhuban and the Boka Bill Formations. The Bhuban formations, which are predominantly arenaceous, have been further sub-divided, based on lithology and order of superposition, into three units, viz. the lower, middle and the upper Bhubans. The Boka bill Formation remained undivided.

**Lower Bhuban**: It is predominantly arenaceous and includes fine to very fine grained, compact, bluish ash, greyish coloured massive to well bedded lithic greywacke sandstones, full of turbidite features. Besides, well laminated siltstone, silty shale/shale (olive green) interlaminations are found to occur within this. The Bhuban is found to occur in the anticlinal cores of the high ranges and in most cases crop out along the faulted contacts.

**Middle Bhuban**: It shows dominance of shales and mud stone with interbands of sandstone.
Upper Bhutan: This unit overlies the Middle Bhutan conformably and their contact is gradational to transitional to the underlying rocks. It is predominantly arenaceous and comprises mostly hard, compact, massive to well-laminated, bluish to grey coloured sandy greywacke with silstone/shale interlamination. The shales are olive green in colour. At places, silty shales are dominant. Sometimes sandstone bands have calcareous matrix and often contain narrow bands of calcareous pebbly conglomeratic sandstones with lamellibranch fossils. Besides, sandstone bands contain large calcareous boulders of various shapes and sizes. They exhibit typical turbidite structures with much ridge structures and ripple-drift-cross laminations.

Bokabil Formation: The rocks belonging to this formation occur conformably over the Upper Bhutan and their contact with the lower units are transitional. It is represented by soft, grey coloured, friable loosely packed medium to fine grained feldspathic sandy greywacke sandy shale with interlaminated silt/shale alternations. Occasionally, brownish yellow ferruginous sandstones are also present. The rocks of this formation exhibit typical turbidite features, with multiple grading, and ripple-drift-cross laminations etc. At places, rough cross-beddings and large current bedding are also present.

Structure

The major structural trend in the area coincides with the regional tectonic lineaments. The general strike of the bed is N-S to N5° E/ N5° W-S5° W/ S5° E, with dips varying from 40° to 50° either towards West or East. Structurally, the rocks of the state lie on highly compressed asymmetrical anticlinal ridges and narrow valleys, with parallel to sub-parallel sub-vertical axial planes. The axes of the folds show convergence pattern in the directions of plunge, except in few cases where they run parallel. The limbs of the major folds are folded into small anticlines and synclines mostly in chevron style. Mesoscopic folds are observed mainly in the incompetent Middle Bhubans which are bounded by the competent Lower and Upper Bhubans. The overall geometry maintains similarity throughout the state. The intensity of fold movements is greater in the East than in the West.

Primary sedimentary structures recorded in the area are of deep sea flysch type structures, viz. graded bedding, the flute casts, load casts,
ridge structures, chevron marks, parting lineations, groove marks, ripple drift-cross laminations of several types. Nature structures, ripple-trough convolutions and the complete sequence of Bouma’s (1962) turbidite structures, etc. The paleocurrent directions shown by all primary features, reveal a mean southerly transport direction indicating a southerly basinal plunge.

**Economic geology**

The state lacks in mineral deposits of economic importance. The Bhuban sandstone is being used as road metal and same can be used as building material also. Many surface and subsurface manifestations of natural gas have been recorded in the state during the explorations. This indicate the possibility of storage of petroleum on the anticlines of Vaikunth ridge and in the vicinity of Chhattachura range.

**Drainage**

The humid conditions created by the drainage system are important as far as growth of vegetation of an area is concerned. It is observed that most of the vegetation in the Mizoram occurs along the river courses and adjoining areas. The drainage pattern of Mizoram is virtually shaped by its physiography and the geological structures. The drainage follows the synclinal valleys between the parallel ranges. The rivers, tributaries and streamlets run through the depressions and gorges, forming angular dendritic drainage pattern across the topographic depressions and heights. The slopes of the streams are moderate. In some cases the main rivers are restricted in their comparatively soft shale horizons. Most of the rivers either flow northwards or southwards and a watershed is formed in the middle of the state. The water holding capacity of the soil is low because of its clayey nature. The rainfall which is the only source of water supply to the rivers of Mizoram, is well spread throughout the year except November, December and January. However, all the rivers are not perennial.

There are number of rivers in Mizoram. The largest river is Tlawng (Dhaleshwari) which is 189.15 km in length. It is followed by Tsiak (159.39 km in length), Chintuipui or Kolodyne (130.46 km), Khawthlangtuipui or Kamaphuli (128.08 km), Tuichang (120.75 km), Tuirial or Sonai (117.53 km), Tuchawng (107.87 km), Mat (90.16 km), Tuipui or Khawchhak (86.94 km), Tuivawl (72.45 km), Telrei (70.84 km), Tuirimi (59.57 km),
Drainage Map of Mizoram
Serlui (56.35 km) etc. The important rivers in the northern parts of the state are Tlawng (Dhaleshwari), the Tuirial (Sonai) and the Tuivawl. The river Tlawng (Dhaleshwari) passes from South to North in the western parts of Mizoram and then it enters into Cachar plain and ultimately joins Barak river. Originating from Zowbawk village (8 km East of Lunglei town) and engulfing the tributaries, viz. Guma (Tul) and Pakwa (Teirai) in the western flank, and medium Lui and Bhairabi Cherra from the eastern side it flows majestically in North. Tul and Teirai run parallel to Tlawng for about 60 km and then join the Tlawng. Similarly, other North flowing rivers, like Sailut Lui and Langkaih (Longai) and Thinglang (Singla) are important. The river Longai forms the border between Tripura and Mizoram in the West.

The Tuirial (Sonai) river flowing northward passes through Chaibibi range in the East and Muakhangtlang, Ungarchhungtlang and Person Chhipitlang in the West.

The river Tuivawl and its tributary Tuival forms an important drainage system in the North-east part of Mizoram. These rivers form the borderline between Mizoram and Manipur and finally join Barak river of Tipaimukh.

In the southern part of Mizoram, the Chimtuipui drainage system is important where river Chimtuipui (Kolodyne) has four tributaries - the Mat, the Tuichang, the Tyao and the Tuipui. It forms boundary line between India and Myanmar in the South-eastern part of Mizoram. It originates from the mountains in Myanmar, flows first westward and then southwards in Mizoram and then reenters the Myanmar.

The Khawtlangtuipui (Kamaphuli), with its tributaries - the Tuichawng, the Phaireng, the Kuo, the Deh and the Tuilangpuipui (Sazailui) form the western drainage system. This river originates from central hills of Mizoram and flows Westwards into Bangladesh at Demagiri and finally joins Bay of Bengal. The drainage system is of rectangular or parallel pattern. The river Tuichang and its tributaries Muthului, Jamilui and Tlangpuilui joins from the South-west and Darntelu, Rangeului, Rolui from the East. Similarly, the Tuivawl, the Tuichang and Tuilangpuipui have parallel courses for quite a length, but run in opposite directions. The Tuichawng and the Phaireng flow Northward and join the Deh. After this the Deh turns to the West and meets the Kamaphuli which flows South-west.
Climate

Mizoram enjoys moderate climate. In the lower altitude at foot hills and the valleys, typical tropical climate is obtained while in the mid region with large expanse, the subtropical moist climate is experienced. A special feature of the climate here is the occurrence of North-westerly thunderstorms, sweeping over the hills in entire state with heavy downpour during April and May being very common.

Temperature varies from about 11° C in winter to 30° C in summer or spring. Winter or cold season starts from November to February with temperature ranging between 8° C and 20° C. The season is pleasant, dry and refreshing during morning and evening hours usually with no rain or very little rain. Winter is followed by warm or spring season, starting from March and continuing up to May with temperatures ranging between 19° C and 30° C. Occasional rainfall occurs and sky is not clear. The rainy or summer season lasts for a longer period and heavy rainfall comes during June to August which covers 89 per cent of the total annual rainfall. September and October are the autumn months when rains cease and temperature is usually between 19° C and 25° C.

During winter, the remote, high altitude places of Champhai region, like Zote and Ngur in the East, and Bualpui and Phowngpui or Phawngpuiitlang (Blue mountain) in the South, experience low temperature, while maximum temperature during summer season is experienced at Kanhmun, Lakicherra and Bhairabi in the North-western part of Mizoram, Demagiri and Chawngte in the western side and Tuipang area in the southern region.

The state recieves annual rainfall between 2000 - 3600 mm from both North-east and South-west monsoons. The North-western part of the state (Longai, Tut and Dhaleshwari region) gets maximum rainfall of over 3500 mm annually. The southern part of Mizoram, including Lunglei area also gets higher rainfall of over 2500 mm. The high rainfall with moist climate is conducive for the vigorous growth of varied types of vegetation.

Soil

The soils of Mizoram have developed from shale, sandstones and mudstone. The laterite soil with high percentage of acidity is the common
characteristic of the soil of Mizoram. The pH value varies from 4.1 to 5.8. Due to heavy rainfall the soil is weathered and leached and as a result is poor in potash, phosphorus and organic carbon contents. Being low in humus contents its colour is yellow, reddish and extremely porous and is unsuited for agricultural purposes.

Plains

The plains or low lying areas in the state are rare except in small patches here and there and in between the mountain ranges. These plains are believed to be possibly the silted beds of lakes which existed at the hill tops. The plains have thick layers of rich alluvial soil. The largest of these plains, the Champhai plain, is situated near Myanmar border about 150 km East of Aizawl town. It covers an area of about 11 sq. km and is suitable for wet rice cultivation.

Another such plain area is at North Vanlaiphai which is situated 90 km South-east of Aizawl. The plain is 10 km long and about half to one kilometer wide. It is also suitable for wet rice cultivation. In the Mat river basin near Thenzawl (ca 40 km from Sherchihp) is another such area which is situated 90 km away from the Aizawl. In the North-west Mizoram, between the rivers Longkhaib and Tlawng, there is a small area below 600 m, near Lokicherra and Bhairabi. Similarly, near Demagiri, the river Karnaphulli and its tributaries form a small low lying area.

Peaks

Mountain peaks in Mizoram usually occur in the eastern and southern side. The ranges in the West are steep and precipitous, whereas those on eastern sides are somewhat gentle. The sides of the hills are covered with forests. The highest peak in Mizoram is Phawngpuiuiang (Blue Mountain) which has a height of ca 2,157 m and is situated in East Chimtuipui district in South-east Mizoram. Some other peaks in Mizoram are Lengtenglawng (2,141 m), Surlang (1,967 m), Lurthlang (1,935 m), Tantilang (1,929 m), Vapartilang (1,860 m), Chalfitilang (1,866 m), Hranuzzollang (1,854 m), Zopuillang (1,850 m), Tawtilang (1,837 m), Mawmangtlang (1812 m), etc.
Lakes

There are a number of beautiful lakes in the state that provide habitat for growth of aquatic vegetation and tropical and subtropical vegetation surrounding them. Some important lakes are as follows:

_Palak lake_ : This oval shaped lake, 200 m long and 150 m wide with an area of 30 ha, is situated about 130 km South-west of Saiha and 5 km from Palu village, in the East Champhai district. The local people, the Lakhers, generally shun the lake area as they believe that the lake is the abode of demons and evil spirits, who are displeased when people enter this area and make them fall sick. The lake is surrounded by tropical evergreen and moist deciduous forests comprising species, like Dipterocarpus retusus, Michelia champaca, Schima wallichii, Mesua ferrea, Chukrasia tabularis, Toona ciliata, Bischofia javanica, Artocarpus chama, bamboos and canes, etc. The lake is abode of aquatic birds with different species of wild duck.

_Tamdi_ : This lake is situated ca 110 km South-east of Aizawl town and 7 km from Satul village in Aizawl district. 'Tam' is a shortened form of the Mizo word 'antam' which means mustard plant and 'di' means lake. Tamdi means lake of mustard plant. People believe that there was a big mustard plant in place where the lake is situated. Whenever this plant was cut, water came out incessantly thereby creating a lake. This is also surrounded by the tropical evergreen and moist deciduous forests.

_Rungdi_ : The lake, having an area of ca 2.5 ha, is situated ca 14 km from Suangpuiawn village in Aizawl district. Rungdi means lake of patridge and was one time the habitat of a large number of a patridges. It is also surrounded by tropical evergreen and deciduous forests.

People and Population

The inhabitants of Mizoram are now known by the generic name of Mizo which means people (Mi) of the hills (Zo). The original stock of the state population was Mongoloid or of Tibeto-Burman origin (Chatterjee, 1951), who migrated to the present location from the southern and western parts of China through upper Myanmar. Over 80 per cent population of the state belongs to Christians. Buddhists, Hindus, Muslims, Sikhs, etc. are also found, but in minority.
One of the well known tribes of the Kuki-Chin group invaded this territory in early 19th century. Historically there has been considerable admixture of different tribes in this area, ultimately leading to three main sub groups - Lushais, Pawis and Lakkers. These apart, there is a substantial representation of non Mizo tribes, such as the Chakma and Kitchens in the southern and South-western part of the state.

Mizos or Lusei (wrongly spelt Lushai)

The Mizos included the following tribes - Ralte, Paite, Duliens, Poi, Sakte, Pankhup, Jhao, Fanai (Molienpu), Molben, Taite, Lakker, Dalang, Mar, Khuangli, Falau (Tashous) Leithlu and Tungur. The Lusei sub group consists of ten commoners (Pachua, Chhangte, Chawanlu, Hauhmar, Chuaunga, Chuahang, Hrahse, Tochhawng, Vanchhawng and Chhakhchhuak) and six chief clans (Zadeng, Pallian, Thangluah, Rivung, Rokhum and Saloi).

Although several languages are spoken in the Mizoram today, but the main language is Lusei. Other languages of the Kuki-Chin groups spoken by different tribes are Zahoo, Lakher, Hmar, Paite, Lai and Ralte. Some of the clans were not yet absorbed by the Luseis. These tribes were the Fanai, the Ralte, the Paite and the Rangte.

Fanai came from Myanmar to Mizoram and established a village near Champhai. They moved further South-west and occupied successively various sites to the West and North-west of Lunglei along the western bank of the Tyao and Kolodyne river between the Baite in the North and the Sangau in the South.

Ralte were found scattered in the Lushai villages to the North of Aizawl, including some close to Aizawl. They had distinct social customs and had noticeable differences in dialects. Among the Duliens or Lushais, the Ralte language is understood and the Saloi chiefs habitually use Ralte language.

Paite belonged to old Kuki group (Paite means goers). In Mizoram, they are confined to an area between two rivers Tiau and Run, in the North-eastern Mizoram. Most of them live in Manipur (Churachandpur) and have preserved their traditional traits. Like Paites, the Rangtes were living mostly in South-western Manipur, adjoining Mizoram.
**Pawis and Lakkers**

In south Lushai hills one found the Fanaits (earlier known as Molienpuiis) inhabiting the land between the rivers Tuichawng and the Kolodyne on the West and Tao and the Kolodyne on the East.

Further south the Pawi tribes inhabited the territory on both the Indian and the Myanmar sides. The term Pawi was not strictly speaking the name of a clan but it was the term used by the Lushais for all the people living near Kolodyne. Further South were the people belonging to the Lakhir tribe. The Lakkers inhabited South-eastern corner in Chintuipui district of the state and South of Haka subdivision of Chin district of Myanmar. Geographically the tribe was located West of Kolodyne river and South of Blue Mountain. Lakkers belong to the branch of ‘Lai’ tribes. These tribes along with sub-tribes were known as Shendus. The Lushais used the name Pawi for the Lai tribes. Pawis are settled in Langlei subdivision. The Lakkers lived in the villages immediately in the South of the Pawi villages. Pawis as well as Lakkers collectively were called Shendus by the tribes in the western hills and the plains. The Lakkers call themselves Mara, but the Lushai call them Lakkers. Lakkers are mostly concentrated in Tuipang block and few villages near Sangau block. The Pawi district council has its headquarter at Lawngtalai, while that of Lakker district councils at Saiha.

**Chakmas**

Chakmas are a distinct tribe localised in the South-western part of Mizoram, predominantly in Chawgate Block. This tribe belong to eastern group of the Indo-Aryan family whose dialect is Chakma. It is a corrupt form of Bengali language written in corrupt Burmese script.

Among other tribes whose reference has been made earlier are Hmar, Paite, and Riang. Riang are mostly in the North-west part of Mizoram along the Tripura border, while Hmai and the Paite are in the North-east corner of Mizoram.

Thus, different tribes and subtribes came down to the present Mizoram, in successive waves and settled down in different parts of Mizoram. However, the settled life was disturbed by perpetual fear of raid and inter-tribe feuds. The advent of British rule and the missionaries activities implanted a sense of love, value, sacrifice in their minds.
Apart from these, there has been considerable number of non Mizo who came from Assam, Tripura and Bihar states for working as skilled or unskilled labourers and shop keepers. The Mizo society has maintained its ethno-cultural values and is highly disciplined. According to 1991 census, the population of Mizoram was 6,89,756 showing a rise of 39.70 per cent over the previous decade. Literacy in Mizoram is also very high at 87.49 per cent. Female literacy in Mizoram is one of the highest in the country. Agriculture is the main occupation and traditional jhum cultivation is practiced by a large number of people. About two third of the population depend on jhumming for their livelihood. Major wood based industries are lacking and poultry and piggery are reared on homesteads.

The present land use pattern in the state, as presented by the Savant and Patnaik (1998), is as follows:

Table 1: Land use pattern in Mizoram

<table>
<thead>
<tr>
<th>Type</th>
<th>Area in sq. km.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. State owned forests</td>
<td>9410</td>
</tr>
<tr>
<td>2. District council forests</td>
<td>297</td>
</tr>
<tr>
<td>3. Agricultural land</td>
<td>580</td>
</tr>
<tr>
<td>4. Water bodies</td>
<td>16</td>
</tr>
<tr>
<td>5. Area under agriculture crop</td>
<td>17</td>
</tr>
<tr>
<td>6. Cash crop plantations</td>
<td>1</td>
</tr>
<tr>
<td>7. Jhum lands</td>
<td>6000</td>
</tr>
<tr>
<td>8. Town/villages/Miscellaneous and other areas</td>
<td>4766</td>
</tr>
<tr>
<td>* Total</td>
<td>* 21,087</td>
</tr>
</tbody>
</table>

* As per forest Survey of India report in government records, the total geographical area of Mizoram is 21,081 sq. km.

Forests

The forests are one of the important resources for the socio-economic development of Mizo people. From early days the entire land has been
under the ownership of the village community. Everyone in the village has the right to utilise the land and the forest produce thereon according to his needs. The total forest area according to various Government statistics is about 15,935 sq. km (Batnew, 1991), of which about 7, 127 sq. km is owned by the government while remaining forests are under the control of village councils (ca 7022 sq. km) and District councils (ca 1783 sq. km). The actual forest cover of the state at present is 18,338 sq. km which constitute 86.99 per cent of the geographical area and is the second highest among the states of the country (Anon., 1999). Out of the 18,338 sq. km forests, 3786 sq. km are dense forests and 14,552 sq. km open forests. According to the State Forest Report 1999, by Forest Survey of India, Dehradun, an increase of 437 sq. km of forest cover has been recorded in 1999 assessment as compared to the increase of 199 sq. km of forest in the previous assessment made during 1997. Dense forests registered a decrease of 562 sq. km, while open forests increased by 125 sq. km. The shifting cultivation remains the single largest factor for the loss of forest cover in the state.

Forest types

The diverse vegetation cover of North-east India as a whole has been discussed by many eminent botanists and forest officers such as Hooker (1854, 1872-97, 1904), Griffith (1848), Clarke (1889), Kanji Lal et al. (1934 - 40), Bor (1938, 1942), Puri (1960), Champion and Seth (1968), Rao and Panigrahi (1961), Murti and Joseph (1984), Sahni (1986), Mehra et al. (1983), Rao and Hajra (1986), etc. However, studies pertaining to forest types of Mizoram (Deb & Dutta, 1987; Singh, 1997; Lalramnghinglova & Tha, 1997) are scanty. Based on these fragmentary studies as well as from the observations and collections made in the field by the authors (K.P. Singh & D.K. Singh), an attempt is made to present the forest types of Mizoram. In general, the forests of Mizoram can broadly be divided into following types, based mainly on the altitude, rainfall and dominant species composition.

1. Tropical wet evergreen and semievergreen forests :

These forests are usually met below an altitude of 900 m and form one of the major forest types in Mizoram with rich species diversity. Patches of these forests can be seen usually on the steep slopes, rocky and steady river banks and areas not suitable for shifting cultivation. The
exact distinction between the evergreen and semievergreen forests is difficult as they occur in the areas of similar characteristics where rainfall averages between 2000–2500 mm annually and temperature varies between 20° C and 22° C. Tropical wet evergreen forests are met usually in southern and western part of Mizoram, while semi-evergreen forests occur in northern, North-western, western and central part of the Mizoram.

The tropical wet evergreen forests exhibit clear zonation or canopies consisting of an admixture of numerous species with a dense and impenetrable herbaceous undergrowth. Most of the species of the top canopy are evergreen trees with tall boles. Cauliflory is rather common. The middle and lower canopies are dense, evergreen and diverse. Epiphytes and parasites are few. Tree ferns, aroids, palms, ferns, orchids, bryophytes and lichens are fairly common. Lianas are frequent and conspicuous. Sedges and grasses are common in humid places or along the banks of rivers and rivulets. Species of *Musa* are also common along the streams on hilly slopes. The top canopy is composed of mighty trees, like *Dipterocarpus turbinatus*, *D. retusus*, *Michelia champaca*, *Artocarpus chama*, *Aphanamixis wallichii*, *Mesua ferrea*, *Toona ciliata*, *Dyabanga grandiflora*, *Bischofia javanica*, *Schima wallichii*, *Haldina cordifolia*, *Firmiana colorata*, *Syzygium cumini*, *Actinodaphne angustifolia*, *A. obovata*, *Sapium baccatum*, *Phoebe attenuata*, *Chukrasia tabularis*, *Anogeissus latifolia*, *Calophyllum polyanthum*, *Cryptocarya amygdalina*, *Cinnamomum beijolghota*, *C. pauciflorum*, *Lindera pulcherrima*, *Persea villosa*, *Castanopsis indica*, *Beilschmiedia assamica*, *Pterospermum acerifolium*, *Elaeocarpus aristatus*, *E. floribundus*, etc. Buttressed trunks are characteristic of the majority of the trees of this story.

In exposed and drier areas, where there is only a thin layer of soil, deciduous elements along with some evergreen trees are found. Sometimes these are grouped as a distinct type, referred as tropical moist deciduous forests (Lahamninglova & Jha, 1997). The distinction between the tropical evergreen forests and tropical moist deciduous forests is difficult as they are found in the same hill ranges. Some common deciduous trees are *Bombax ceiba*, *Juglans regia*, *Emhlica officinalis*, *Erythrina arborescens*, *Albizia lebbek*, *A. procera*, *Lagerstroemia speciosa*, *Firmiana colorata*, *Sterculia villosa*, *Bischofia javanica*, *Podocarpus neriifolia*, *Gmelina arborea*, *Bursera serrata*, *Garuga pinnata*, *Macaranga denticulata*, etc.
The second canopy is composed of trees, like *Garcinia coriaria*, *G. xanthochymus*, *Dysoxylum binectariferum*, *Aphanamixis chittagonga*, *Litsea glutinosa*, *L. laeta*, *L. lancefolia*, *Pterospermum semisagittatum*, *P. lancifolium*, *Syzgium cerasoides*, *Symplocos javanica*, *S. lucida*, *Knema angustifolia*, *Oxyceris longiflora*, *Stereospermum colais*, *Elaeocarpus lanceaefolius*, *Ardisia colorata*, *A. paniculata*, *Turpinia pomifera*, *Hydnocarpus kurzii*, *Heritiera papilla*, *Mangifera sylvestica* etc. Many of these trees are tall but thin boled. Smaller trees of top canopy are also found in second storey.

The third storey or canopy consists of smaller trees and shrubs with maximum floristic diversity. The common species of this storey are *Ficus subincisa*, *Leuca indica*, *Meliosma simplicifolia*, *Litsea meissneri*, *Sauraua napaulensis*, *Garcinia sopsopia*, *Eurya cerasifolia*, *Maesa paniculata*, *Clausena heterophylla*, *Mycoea longifolia*, *Pandanus foetidus*, *Tounefortia monnana*, *Symplocos lucida*, *Diospyros lanceaeefolius*, *Cyathrea gigantea*, *Euonymus attenuatus*, *Philoganathus thyrsiformis*, *Eranthemum purpurascens*, *Daedalacanthus tubiflorus*, etc.

Ground layer has humus and leaf litter and rich in herbaceous flora. Ground cover comprises species, like *Curculigo latifolia*, *Phrynium capitatum*, *Globba clarkei*, *G. multiflora*, *Costus speciosus*, *Begonia annulata*, *B. hirta*, *B. leshatensis*, *Impatiens chinensis*, *L. balsamina*, *Viola betonicifolia*, *Euphorbia spp.*, *Sonerila maculata*, etc. *Aeginetia indica*, a saprophyte is also found in moist places.

Climbers and liana, like *Pericampylus glaucus*, *Pyecarrhena pleniflora*, *Stephania glandulifera*, *Tinospora cordifolia*, *Entada rheedei*, *Dioscorea pentaphyllos*, *Passiflora foetida*, *Hoya parasitica*, *Trichosanthes tricuspidata*, *Rhaphidophora eximia*, *Pathos scandens*, *Mucuna pruriens*, *Sarcostemma secamone*, *Thladiantha calcarata*, *Thunbergia grandiflora*, *Piper nigrum*, *P. clarkii*, *Combretum squamosum*, *Smilax lanceaeefolius*, *Oncidium graminum*, etc. are common. These climbers intertwining with each other and entangling over other trees give a wiring look to the interior of the forest at many places. Many epiphytic ferns also grow over these giant liana.

The evergreen forests are also rich in both epiphytic as well as terrestrial orchids. They grow on main trunks of lofty trees and in different
ecological niches of the steep ravines. Species, like *Coelogyne nitida*, *C. flaccida*, *Cymbidium aloifolium*, *C. longifolium*, *Buthophyllum viridiflorum*, *B. repans*, *Dendrobium aphyllum*, *D. chrysanthum*, *D. densiflorum*, *D. falconeri*, *D. jimbriatum*, *Eria pannea*, *Paphiopedilum villosum*, *Renanthera imbricata*, *Phaius flavus*, *Pholidota imbriicata*, *Pleione preaecox*, etc. are of common occurrence in Lunglei, Champhai, Sairep areas. Among the parasites *Scurula pulvverulentata*, *Helixanthera parasitica*, *Cuscuta reflexa*, *Viscum monoticum*, *Balanophora dioica* (root parasite), *Loranthus spp.*, etc are seen.

In exposed places or abandoned jhumland, the canopies are not distinct. In these places the species, like *Aporusa ohlonga*, *Mallotus philippensis*, *Maesa ramentacea*, *Cordia fragrantissima*, *Bridelia squamosa*, *Macaranga denticulata*, *Antidesma bunius*, *Dysosyrum binectariferum*, *Sterculia villosa*, *Callicarpa arborea*, *Meliosma simplicifolia*, *Dalbergia stipulacea*, *Duabanga grandiflora*, *Gmelina arborea*, *Bauhinia variegata*, *Syzygium fruticosum*, etc. are common. Similarly climbers like *Dalhousiaca bracteata*, *Butea parviflora*, *Combretum roxburghii*, *Mucuna nigricans*, *Thunbergia grandiflora*, members of *Cucurbitaceae*, *Dioscoreaceae*, etc. are also abundant.

The ground flora of these forests consists of herbs and undershrubs, like *Clerodendrum viscosum*, *Melastoma malabathricum*, *Triumfetta rhomboidea*, *Desmodium heterocarpum*, *D. caudatum*, *Uvaria clarkei*, *Aryacosa geensis*, *Ageratum conyzoides*. *Blumea fistulosa*, *Crotalaria ferruginea*, *Urena lobata*, *Hedychiium coronarium*, *Ipomoea hederifolia*, *Peperomia pellucida*, *Galinoga parviflora*, *Vernonia albicans*, *Solanum nigrum*, *Polygonum chinense*, *Torenia diffusa*, members of *Scrophulariaceae*, *Acanthaceae*, *Lamiaceae*, etc. The three species of “Dancing girl” viz. *Manisstia saltatoria*, *M. spatulata*, and *M. wongerii*, the later being endemic to the state are also found in shade on rocks in Lunglei and Blue Mountain areas. Other than these the common species of grasses, viz. *Imperata cylindrica*, *Chimonobambusa callosa*, *Panicum inornatum*, *Cynodon dactylon*, *Digitaria ciliaris*, *Pogonatherum erinimum*, *Saccharum arundinaceum*, *S. longisetosum*, *Thysanolaena maxima*, etc., are also abundant.

Several species of canes are found in Mizoram. These are *Calamus latifolius*, *C. erectus*, *C. tenuis*, *C. leptospadix*, *C. acanthospathus*, etc.
Swamp flora as reported by Deb and Dutta (1987) consists of many herbaceous species, some shrubs and few trees. The common tree species are Barringtonia acutangula, Lagerstroemia parviflora, Ficus spp., Bischofia javanica, etc. The dominant herbaceous species are Phragmites karka, Alpinia nigra, Saccharum arundinaceum, S. spontaneum, Polygonum microcephalum, P. donii, P. glabrum, Schoenoplectus lateriflorus, Cyperus laxus, C. difformis, Fimbristylis dichotoma, Utricularia aurea, U. exolea, Elechhornia crassipes, etc. In marshy places along the river courses especially in Demagiri area, Alpinia nigra, A. bracteata, A. galanga, Imperata cylindrica, Phragmites karka, Saccharum arundinaceum and S. spontaneum, etc. are found. They form societies and grow in various proportions. They usually form Phragmites-Alpinia associates and Alpinia-Phragmites-Saccharum associates.

Rooted in the mud at edges are found Osbeckia chinensis, Ludwigia octovalvis, L. prostrata, etc. Aquatic species either floating or submerged are few in Mizoram. Some such species are Trapa natans var. bispinosa, Pistia stratiotes, Spirodela polyrhiza, Hydrilla verticillata, Limnophila repens, Rotala indica, Leersia hexandra, Polygonum spp., etc.

2. Montane subtropical forests:

These forests are usually found on high hills between 900 and 1500 m altitude in the eastern fringes bordering Chin hills of Myanmar, and places which are cooler and have less precipitation. Subtropical vegetation shows mixed pine forests. The common species of these forests are Pinus kesiya, Quercus leucotrichophora, Q. acutilimina, Q. semiserrata, Castanopsis purpurella, Podocarpus neriifolia, Schima wallichii, Prunus cerasoides, Myristica spp., Phoebe golapens, Duabanga grandiflora, etc. In Ngur-Zote, close to Myanmar border, there is a small patch of Pinus kesiya, associated with Schima wallichii, Myrica esculenta and Quercus spp. The plantations of pine trees have also been taken up by the side of Silchar-Aizawl national highway beyond Kolasib and Pharpak in Blue Mountain area. The other species of subtropical forests belong to the genera Acacia, Albizia, Bridelia, Castanopsis, Cinnamomum, Engelhardtia, Erythrina, Ficus, Garpinia, Michelia, Terminalia, etc. In some places palms such as Calamus erectus, Caryota urens, Didymosperma nana, Licuala pelata, Phoenix humilis, etc. are also found and form part of subtropical forests. The species of Lyonia, Gaultheria, Rhus, etc., are some of the common shrubs in the forests,
whereas the herbaceous elements are represented by Potentilla fulgens, Ranunculus sceleratus, Artemisia spp., Elsholzia fruticosa, etc.

3. Temperate forests:

These forests usually occur above the elevation of 1600 m in the areas like Lengteng, Naunzar, Pharpak, Thalting, Phawagpui reserve forests and display impenetrable virgin primary forests. These forests are not typical temperate forests as found elsewhere in eastern Himalaya, in appearance they look like somewhat subtropical type. Here subtropical elements are mixed with some temperate elements. In several congenial localities, particularly on the valley slopes of different tributaries the vegetation presents an admixture of tropical and subtropical elements. The predominant arboreal elements in the forests are Pinus kesiya, Actinodaphne micraptera, Betula alnoides, Eucalyptus populea, Elaeocarpus serratus, Dillenia pentagyna, Kadsura heteroclita, Michelia dolisopa, M. champaca, Garcinia anomala, Schisandra neglecta, Photinia integrifolia, Litsea salicifolia, Quercus floribunda, Lithocarpus dealbata, Rhododendron arboresum, R. reticulatum, R. watti, R. johnstoneanum, etc. The prominent shrubs occurring in these forests are Pittosporum podocarpum, Xylosma controversum, Camellia caudata, Mahonia pycnocephala, Rubus ellipticus, R. hirmanicus, Clerodendrum viscosum, Rosa brunonii, Baliospermum spp., Helicia nilagirica, Viburnum spp., Osbeckia spp., Mussaenda spp., etc. The common herbaceous species of these forests are Hypericum elodeoides, H. monanthemum, Plantago major, Potentilla fulgens, Impatiens spp., Centella asiatica, Cyanotis cristata, Chirta spp., members of Asteraceae, Connellinaceae and grasses, like Arundinaria callosa, Coix lacryma jobi, Cynodon dactylon, Saccharum longiseta, Eragrostis unioloides, E. nigra, etc. Besides, the common climbers in these forests are Brachystegia calycinum, Illigeria khasiana, Millettia pachycarpa, M. pulchra, Rosa brunonii, Smilax spp., Vitis spp., etc. Pteridophytes are also abundant in these forests and are represented by Selaginella chrysocaulos, Cyclosorus perakensis, Dryopteris elongata, Lycopodium hamiltonii, L. setaceum, Tectaria macrodonata, Davallodes membranulosis, Arthromeris wallichiana, Pyrosia stenophylla, Polypodium spp., Dryopteris spp., etc. The epiphytic components are dominated mostly by Lichens, Bryophytes, Pteridophytes, various species of orchids. Aeschynanthus spp., Agapetes spp., Hoya spp., Vaccinium spp., Viscum spp., etc.
4. 

Bamboo forests:

Bamboos usually grow as an understorey to the tree species in tropical evergreen and subtropical mixed-deciduous forests, whereas *Melocanna buccifera* forms dense or pure forests in certain areas in the state. Large tracts of bamboos are seen throughout Mizoram but their distribution is somewhat restricted to about 1600 m and below. They occur mostly between 40 m and 1520 m in tropical and subtropical areas. However, few species, like *Chinomobambusa chilosa, Dypnusostachyum Jainianum, Melocalamus Masterii* occur in temperate areas in Blue Mountain and Mount Chaltih. It appears that bamboos have resulted from jhumming system of cultivation (Deb & Dutta, 1987). For practicing jhum cultivation the forests are burnt and tree species are destroyed but the bamboo rhizomes throw out new culms as soon as favourable temperature and seasonal monsoon arrive. Therefore, in abandoned jhumland they are the first coloniser and grow rapidly. These colonised bamboo forests are repeatedly cut and burnt for jhumming till the land become unsuitable for cultivation in areas other than the raverine reserve forests. Bamboos are more concentrated along the Tripura border. They are abundant in the western and eastern fringes than in the eastern region. In the eastern region bamboos are usually confined along the river banks up to a kilometer or so.

The common species of bamboos found in Mizoram are *Melocanna buccifera, Bambusa tulda, Dendrocalamus Hamiltonii, Schizostachyum polymorphum*, and species of *Melocanna* and *Schizostachyum*, which grow single stemmed without forming clumps. The species, like *Bambusa tulda, B. vulgaris, Dendrocalamus longispatus* prefer steep and rocky areas with sandy gravelly soil, whereas the sporadic occurrence of *Dendrocalamus Hamiltonii* and *D. giganteus* favours flat topped gentle slope with sandy loam or loamy-clay soils.

Some important associates found growing along with bamboos are *Emblica officinalis, Litsea monopetala, Pterospermum acerifolium, Terminalia myriocarpa, Dipterocarpus turbinatus, Carapa Gumm., Artocarpus chama, Duabanga grandiflora, Albizia procera, Haldina cordogata, Gymnelia arborea, Syzygium spp.*, etc.

5. 

Quercus forests:

Quercus forests are mostly found intermingled in subtropical and
temperate areas. Pure patches or predominant *Quercus* species are present near Champhai-Baite hill ranges and its distribution is restricted to other small areas in the eastern part of Mizoram. *Lithocarpus dealbatus* is other main species.

6. **Jhumland**:

Jhumlands are very common in Mizoram. They are classified variously as current jhumland, old jhumland and abandoned jhumland. Jhumlands are more prevalent in eastern Mizoram where extensive and intensive jhumming is practiced. Similarly, the areas in western side in Lunglei district towards Bangladesh have also jhumlands. Chimalumpu district is most effected district as far as jhum cultivation is concerned. The vegetation of these jhumlands have also been described above. The bamboos, grasses, members of Asteraceae, Melastomataceae are most abundant in jhumlands.

**Botanical Studies**

The literature indicates that the botany of the state is not adequately studied as compared to other states of North-east India. The initial botanical studies are mainly based on the collections made by army officials, administrators, some missionaries out of their personal interest.

Sir J.D. Hooker's *Flora of British India* (1872-1897) was the first comprehensive flora to deal with plant species from the then called Lushai hills, presently known as Mizoram. These collections were made by J.D. Hooker and T. Thomson for their flora of British India. However, a significant contribution for the first time on the botany of Mizoram was made by Col. A.T. Gage (1901), who recorded 317 species, including 26 species of Cryptogams, based on his own collections made from a small area in Lunglei district for about 5 weeks on a march from Chittagong to Lunglei and back in the months of March and April 1899. J.E. Leslie also made some valuable collections in December 1902 and deposited them in Calcutta, which were subsequently indentified and preserved properly. Mrs N.E. Parry also made some collections between 1924 and 1929 from Lunglei district, when her husband was in administrative charge of the area. Most of her collections, along with some propagules, were sent to Royal Botanic Gardens, Kew and a smaller portion to the Royal Botanic Garden, Kolkata (now Indian Botanic Garden). Rev. W. G. L. Wengor of the Baptist Mission at Lunglei, from 1926-1922, Rev. R.A. Lorrain
of the Pioneer Mission to the Lakhers at Sherkor and his daughter Lorraine Foxall also made some collections from Lungleh and Sherkor, and sent most of them to Kew and some to Kolkata. Based on all these sources Fischer (1938) published ‘The Flora of Lushai Hills’ enumerating therein 1360 species, including 6 species of Gymnosperms and 155 species of Cryptogams. Forest officers, like U.N. Kanjilal, P.C. Kanjilal and his colleagues A.Das, C. Purkayastha and R.N. De also made efforts to collect the material from different places for the undivided Flora of Assam. This finally resulted in the publication of ‘Flora of Assam’ (Kanjilal et al., 1934-40) and included some species from the state of Mizoram. But these studies were not exhaustive. Bor (1940) while contributing an account on grasses of Assam for Kanjilal’s (l.c.) Flora of Assam, also mentioned few species from the Lushai hills.

After the publication of Flora of Assam (Kanjilal et al., 1934-40), there was a complete silence in the floristic activity until the re-organisation of Botanical Survey of India and establishment of Eastern Circle, at Shillong in 1956. Scientists from this circle have contributed immensely to the understanding of the rich flora of the region.

D.B. Deb and R.M. Dutta explored the state during January and July-August 1963. Identifications of these collections resulted in the publication of 585 species under 380 genera of Pteridophytes and Angiosperms, which were not reported earlier from the state and some of those reported without mentioning the locality of occurrence (Deb & Dutta, 1987). Some species of sedges (Rao & Verma, 1982) and grasses (Shukla, 1995) have also been worked out for the state, while they were revising the families at regional level. Shukla et al. (1978) has made observations on some economic plants and mentioned uses of 59 species from Mizoram. Kataki et al. (1984) enumerated 159 species of orchids from Mizoram along with their range of distribution in North-east India and adjacent South-east Asian countries.

In recent past K.P. Singh and D.K. Singh explored different districts of the state during 1988-1995 and collected about 2200 field numbers. These have been identified and will be dealt in different volumes of ‘Flora of Mizoram’ to be published by the Botanical Survey of India. A conspectus of orchids dealing with 244 species under 74 genera from Mizoram has already been published (Singh et al., 1990).
In recent years ethnobotanical and medicinal uses of higher plants have also been recorded by various workers (Mahanti, 1994; Lalramnunghinglova, 1996; Lalramnunghinglova & Jha, 1997) leading to the information on more than 500 species which are being used in the state.

Lalramnunghinglova (1997) has also gave an account of bamboos and their uses in Mizoram. Prominent agroforestry system and important multipurpose trees in farming system of Mizoram were presented by Lalramnunghinglova and Jha (1996). A discussion on forestry management in Mizoram was published by Garbyal (1986) and Savant and Patnaik (1998). Floristic diversity of the state is discussed by K.P. Singh (1997). More recently Flora of India series (Sharma et al., 1993a, 1993b, 1993c, Haji et al., 1995a,b, 1997; Singh et al., 2000) also includes many species under different families from the state. Thus, there was considerable improvement in the knowledge of Botany of Mizoram during the last one decade. However, more information need to be collected as some areas are still either underexplored or unexplored floristically.

Forestry

In beginning the forests of Mizoram were well protected and managed by village chieftains. A useful discussion on the forestry of Mizoram has already been made (Garbyal, 1996; Savant & Patnaik, 1998). In villages, forest produce was utilised for domestic purpose in appropriate way by the permission of village head. During the British regime, commercial exploitation of forests started in accessible areas, depleting the rich tropical forests. Mizoram forest act 1955, framed for Lushai hill has also provided provisions for issuing permits, which also resulted in selective removal of valuable trees leaving behind only the trees of inferior quality.

As far as scientific way of management of forests in Mizoram is concerned, a good beginning was made with the establishment of a state forest department in 1972. In initial stages attempts were made to raise plantations of economic tree species on abandoned jhumland and degraded forest land and this was continued in VIII and IX five years plans. The main schemes in operation as mentioned by Savant and Patnaik (1998) are (a) Area oriented fuel wood and fodder plantations scheme (FFP), (b) Integrated afforestation and ecodevelopment projects (IAEP), (c) Non timber forest produce scheme (NTFP), and (d) Compensatory afforestation (CA). Till now an area of 1,75,000 ha has been covered under plantations of Tectona grandis, Gmelina arborea, Michelia champaca
and *Pinus kesiya*. Canes and medicinal plants are raised under NTFP Scheme. Fuel wood, fodder and fruit trees are planted under FFP scheme which is funded by Government of India on 50:50 sharing basis, while other afforestation schemes are entirely funded by the Government of India.

Farm forestry and private tree planting have also been encouraged by the state government. Private planters have gone for plantation of teak, *Gmelina arborea* and *Eucalyptus* species in recent years and as a result about 8000 ha land is utilised in private sector. To promote forestry research, the state forest department has set up a separate ‘Forest Research wing’ under the control of Conservator of Forests. Silviculture and research division is looking after the various research programmes. Nursery and field trials of various forest species, like *Dipterocarpus*, *Mesua ferrea* and other species have given favourable results. Further, a forest training school was also established in 1974 to impart training to foresters for proper forestry management practices. A full time Botanist and Orchidiologist are working in the state forest department to promote studies on taxonomy, orchids and other ethnobotanical studies.

Young Mizo Association (YMA), a prominent voluntary organisation, is also playing significant role towards protection of forests, ecology and environment. This group has immensely contributed towards the cause of tree plantation, wildlife protection and creating awareness among the local public. As a result arms and ammunitions have been laid down by local tribes during preceding years.

In addition to this, the staff of Botany department, Pachunga University College at Aizawl have contributed many articles for promotion and preservation of plant diversity. In recent years Government of India has made Joint Forest Management (JFM) component mandatory in all afforestation schemes to be implemented in Mizoram. This programme is receiving good response from the people.

**Agroforestry**

Production of agricultural crops is one of the main source of livelihood of Mizo people. Over the years, farmers in many areas in Mizoram have been practicing various form of agroforestry or taungya system (Lalramghinglova & Jha, 1996). They use various combinations of
multipurpose trees and shrubs along with their food crops in their fields. This gives them additional benefits on sustained basis. However, in recent years, maximum cash crops are grown to fetch more money and tree species are being neglected. The most common agricultural crops grown along with tree species are Phaseolus mungo, P. vulgaris, Dolichos lablab, Brassica oleracea var. capitata, B. oleracea var. botrytis. Colocasia esculenta, Capsicum sp., Sechium edule, Gossypium arboreum, Vigna sinensis, Cucumis sativus, Zingiber officinale, Arachis hypogaea, etc.

The most common and successful practice is intercropping of Oryza sativa (paddy) with Tectona grandis (teak). Paddy is harvested in November, leaving teak plants free to flourish. Similarly multipurpose trees and shrubs grown under different agroforestry system are appended below in Table 2.

Economic Plants

From time immemorial plants have been utilized by man for various purposes such as food, fodder, shelter, clothing, medicine, fibre, gum, etc. They are more closely associated with the life of tribal communities. Mizoram has rich wealth of plants having economic potential as ornamentals, horticultural, timber, medicinal and ethnomedical significance.

(i) Timber plants: There are about 125 good timber yielding species which are used in making plywood, pulp, constructional work, poles, agricultural implements, furniture, etc. Some of the timber species along with their local names are Haldina cordifolia (Lungkhu), Neolamarckia cadamba (Baulhur), Aphramomum wullichii (Salatal), Aglaia edulis (Thingri), Albizia lebbeck (Thingri), A. odoratissima (Kangtek), Alseodaphne sp. (Bulfei), Artocarpus chama (Lamkhuang), Bombax ceiba (Phungchawng), Cassia fistula (Makpazang Kang), Cinnamomum bejolghota (Sentezel), Chukrasia tabularis (Zawngtei), Cynometra polyandra (Kawrmarhia), Cordia fragrantissima (Muk), Dillenia indica (Kawrthingdeng), Dipterocarpus retusus (Thingson), D. turbinatus (Thingsen), Duabanga grandiflora (Zuang), Gnetima arborea (Thanvawng), Mangifera indica (Theiha), Morus laevigata (Lungli), Mesua ferrea (Hershe), Michelia champaca (Zobul), Parkia roxburghii (Zawngtei), Pinus kesiya (Fir), Pterospermum acerifolium (Siksil), Phoebe goolapensis (Lawngthinhba), P. attenuata (Saperbul), Schima wallichii (Khing). Shorea rhusta (Lawngthing), Sterculia villosa
<table>
<thead>
<tr>
<th>Botanical name</th>
<th>Mirc name</th>
<th>Family</th>
<th>Habit</th>
<th>Main uses</th>
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<td>Thingri</td>
<td>Mimosoaceae</td>
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<td>Kusa</td>
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<td>Cinnamomum zeylanicum</td>
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<td>Clerodendrum colebrookiannae</td>
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<td>Verbenaeeae</td>
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<td>Leaves used as vegetable, and medicine; plant cannot soil erosion</td>
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<tr>
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<td>Sapoteaeae</td>
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<td>Thiananwang</td>
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<td>Mizo name</td>
<td>Family</td>
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<td>Seed-nut, nectar juice and seed and varnish, medicine for leprosy</td>
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<td>Kawthai</td>
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<td>Tek, Ilwa</td>
<td>Violaceae</td>
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<td>Trachys palmaris</td>
<td>Kwhiteheti</td>
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<td>S,T</td>
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<td>Vernicia fordii</td>
<td>Tung</td>
<td>Euphorbiaceae</td>
<td>T</td>
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<tr>
<td>Zanthoxylum rhetsa</td>
<td>Chingit</td>
<td>Rutaceae</td>
<td>T</td>
<td>Lemon-vegetable, fuelwood</td>
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<tr>
<td>Ziziphus jujuba</td>
<td>Borei, kawtshlu</td>
<td>Rhamnaceae</td>
<td>S,T</td>
<td>Fruit, fodder</td>
</tr>
</tbody>
</table>

B = Bamboo; S = Shrub; T = Tree.
(Khaupui), Suzygium cumini (Hmuipui), Terminalia myriocarpa (Char), Toona ciliata (Teipui), Tectona grandis (Ilawr), etc.

(ii) **Ornamental plants**: Mizoram flora has numerous ornamental species of great commercial potential. Orchids represented by ca 251 species are one of the most valued ornamental plants. Some of the most ornamental orchid taxa found in the state are Coelogyne barbata, C. punctulata, Cymbidium elegans, C. hookerianum, C. iridioides, C. mastersii, Dendrobium chrysanthum, D. chrysotoxum, D. densiflorum, D. devonianum, D. falconeri, D. fimbriatum, Era paniculata, Paphiopedilum villosum, P. hirsutissimum, Phaius flavus, P. tankervilliae, Thunia alba, Vanda coerula, Renanthera imschootiana, Rhynchostylis retusa, etc.

The other ornamental species found in the area are Begonia thomsonii, B. annulata, B. wattii, Hedychium cooceineum, H. coronarium, H. gardnerianum, H. ellipticum, H. spicatum, Ixora acuminata, I. roxburghii, I. undulata, Impatiens chinensis, I. triloba, Hibiscus rosa-sinensis, Malastoma malabathricum. Murraya paniculata, Osbeckia capitata, Oxyspora paniculata, Rosa multiflora, Sonerila maculata and members of Gentianaceae, Gesneriaceae, Asteraceae, Acanthaceae, etc.

(iii) **Wild relatives of cultivated crop plants**: Mizoram flora is also characterized by having a large number of wild relatives of cultivated crop plants that would help a breeder to evolve new varieties with desirable characters. Some species belonging to this category are Areocarpus chama, Citrus indica, C. medica, Camellia caudata and species of Musa, Colocasia, Prunus, Alpinia, Ammomum, Cajanus, Cinnamomum, Cissus, Curcuma, Garcinia., Piper, Ipomoea., Saccharum, Zingiber, etc.

(iv) **Fibre yielding plants**: The plant belonging to this category are species of Abelmoschus, Abutilon, Acacia, Bauhinia, Hibiscus, Kydia, Sterculia, Grewia, Helicteres, Agave, Calotropis gigantea, Triumph, Typha, Crotonaria, etc.

(v) **Bamboos**: Bamboos, a group of tall arborescent grasses are closely associated with the life of Mizos. Lalramningthiova (1997) already provided an account of Bamboos from the state. Of the 63 species of Bamboos
known from N.E. India (Biswas, 1988), 19 species occur in Mizoram. Bamboos in Mizoram form one of the important forest resources and are used in many ways by the Mizo community. The young, white and tender shoots of both runner and clump forming bamboos, like *Bambusa tulda*, *Melocanna baccifera*, *Dendrocalamus longispathus*, *D. hamiltonii*, *D. giganteus* are eaten in the form of cooked vegetable. During the last Mautam famine in 1959, bamboo shoots were the main food and eaten along with *Dioscorea* tubers. The shoots are also used for preparation of curry or chutney usually in combination with potatoes or tomatoes, etc. The leaves of *Bambusa arundinacea*, *Schizostachyum capitatum*, *Dendrocalamus sikkimensis*, *D. stricus* and *Melocanna baccifera* are used as fodder for animals. The fruits of *Melocanna baccifera* are readily devoured by cattle, deer, pigs, and goats, etc. Bamboos are also used extensively as building material and also as raw material for cottage industry by the rural people. The species extensively employed in construction work are *Bambusa tulda*, *Schizostachyum capitatum*, *Dendrocalamus giganteus*, *D. hamiltonii*, *D. longispathus* and *Melocanna baccifera*. For ceiling and partition purposes, the culms of *Schizostachyum polymorphum* are used. Similarly baskets, hats, etc. are made from the species, like *Bambusa vulgaris* and *Dendrocalamus* spp. In interior areas the long stems of *Dendrocalamus giganteus* are used as water vessels for storing water and also for making frames. Species, like *Melocanna baccifera*, *Schizostachyum dullooa* and *S. polymorphum* are used for making umbrella handles. Toys and mats are also prepared from bamboo species. *Bambusa arundinacea*, *B. tulda*, *B. vulgaris* and other thick walled species are used for making furniture. Horizontally tied bamboos of *Dendrocalamus longispathus*, *Melocanna baccifera* are used for transportation of timber logs in major rivers in Mizoram. The cut culms of *Melocanna baccifera* are used as tumbler or cups for drinking water, soup and tea by the farmers or jhumias and long culms also as fencing material to protect road side plantations in agricultural crops. Dried bamboos in villages are used as fuelwood. The outer green skin of bamboos is used to stop bleeding in fresh cuts and wounds by the local people. Thus bamboos are used in all walks of life. There is an urgent need to establish bamboo based industry in the state to manage bamboo resources sustainably to improve economic conditions of the local people.

(vi) Medicinal and ethnobotanical plants: Mizoram forests are rich in medicinal as well as plants of ethnobotanical importance. It is interesting to note that almost every plant is assigned the local name here, indicating their close relationship with the people. Shukla et al. (1978) recorded 59
economic plants from Mizoram. So far, about 500 species under 383 genera have been recorded from the state, possessing medicinal and ethnobotanical uses (Mahanth, 1994; Lahrumghinglova & Jha 1996; Singh, 1997). These are enumerated alphabetically along with family and local names in Table 3.

Floristic diversity

The floristic knowledge of the state is incomplete as studies are still continued. In a recent review of the status of floristic diversity in the state, Singh (1997) recorded 2358 species of plants from Mizoram out of which 2141 species in 905 genera and 176 families belonged to Angiosperms, 6 (in six genera and four families) to Gymnosperms and 211 (in 66 genera and 35 families) to Pteridophytes. Of the 2141 species of Angiosperms, 1641 species were those of dicots, while the rest belonged to the monocots. These figures, however, are likely to change once the explorations and floristic studies in the state are complete. The present volume deals with 884 taxa under 403 genera belonging to 90 families of Angiosperms.

Major threats and conservation

The major portion of the forests of Mizoram fall under tropical and subtropical categories, that exhibit maximum species diversity. These forests are greatly affected due to various biotic activities and thus, causing threat to species diversity. The 1999, State of Forest Report by the Forest Survey of India, indicates a decrease in forest cover in Mizoram, as compared to gain of previous years. It is also observed when forest cover is increased due to regeneration in abandoned jhumland and other areas, the secondary vegetation will be entirely of different type from those found before jhumming in virgin forests. It takes long period to reach climax vegetation. The causes responsible for degradation of virgin forests are expansion of agriculture, construction of houses for human settlements, illegal encroachments in forest land, construction of new roads, urbanisation, jhumming, etc. Of all these, jhumming is the main cause of destruction of virgin forests. Jhumming is a lifestyle and celebrated with great festivities in Mizoram. More than 70 per cent workforce depend upon jhum cultivation which is usually carried out in the uncultivated forests falling under jurisdiction of village councils. With decrease in jhum cycle period (2-4 years) due to demographic pressure, the land hardly gets sufficient time to recover its original fertility and climax vegetation. As a result many virgin forests have been replaced by bamboo forests and grasses which are common in the areas where jhumming is vigorous.
<table>
<thead>
<tr>
<th>Name</th>
<th>Local name</th>
<th>Family</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abelmoschus esculentus (L.) Muench.</td>
<td>Bahromea</td>
<td>Malvaceae</td>
<td>Decoction of young capsules as an emollient, demulcent, diuretic in catarrhal affections, dysuria and gonorrhea.</td>
</tr>
<tr>
<td>Abelmoschus manihot (L.) Medicus</td>
<td>Uchhame</td>
<td>Malvaceae</td>
<td>Leaf and root paste as a poultice for sprains and inflammations.</td>
</tr>
<tr>
<td>Acacia pennate (L.) Wild.</td>
<td>Khanghu</td>
<td>Mimosaceae</td>
<td>Leaf juice with milk given to infants in indigestion; leaves with sugars chewed is bleeding of gums; bark juice antidote for snake poison; fruits and stems as fish poison.</td>
</tr>
<tr>
<td>Acanpe papillosa (Lindl.). Lindl.</td>
<td>-</td>
<td>Orchidaceae</td>
<td>Roots in rheumatism and as tonic.</td>
</tr>
<tr>
<td>Acer laevisatum Willich</td>
<td>Thinghim</td>
<td>Arecaceae</td>
<td>Leaf paste used externally for sprains.</td>
</tr>
<tr>
<td>Achyranthes bidentata Blume</td>
<td>Vangvaitu</td>
<td>Amaryllidaceae</td>
<td>Plant paste as antiseptic and diuretic.</td>
</tr>
<tr>
<td>Adiantum capillus-veneris L.</td>
<td>Cha-lawk-te</td>
<td>Adianitaceae</td>
<td>Freight as expectorant, diuretic, emmenagogue, tonic, demulcent and Ehrig.</td>
</tr>
<tr>
<td>Adiantum candidum L.</td>
<td>Cha-lawk-te</td>
<td>Adianitaceae</td>
<td>Freight in diabetes, skin diseases, cough, cold and fever.</td>
</tr>
<tr>
<td>Adiantum flabellumatum L.</td>
<td>-</td>
<td>Adianitaceae</td>
<td>Freight in cough.</td>
</tr>
<tr>
<td>Adiantum philippense L.</td>
<td>Cha-lawk-te</td>
<td>Adianitaceae</td>
<td>Plants for dysentery and fever.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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<tr>
<td>Anis chinar L.</td>
<td>Saaghar viibel</td>
<td>Orobanchaceae</td>
<td>Juice of roots, tubers and rhizome used externally in mumps.</td>
</tr>
<tr>
<td>Aegle marmelos (L.) Correa</td>
<td>Bel-thei</td>
<td>Rutaceae</td>
<td>Decoction of root and stem bark for diarrhoea, fruit pulp as sedative.</td>
</tr>
<tr>
<td>Arisarum vulgareum Booth</td>
<td>Lahlengpar</td>
<td>Orchidaceae</td>
<td>Juice of stem and leaves applied externally to remove worm.</td>
</tr>
<tr>
<td>Asclepias barbata (A.) C.K.</td>
<td>Bazuthaatai</td>
<td>Gesneriaceae</td>
<td>Decoction of root for fever; flowers in throat pain.</td>
</tr>
<tr>
<td>Asclepias thyrsiflora (Benth.)</td>
<td>Holik</td>
<td>Fabaceae</td>
<td>Decoction of fruits for dysentery and stomachache.</td>
</tr>
<tr>
<td>Asclepias taylornii Roxb.</td>
<td>Sadih</td>
<td>Agavaceae</td>
<td>Juice as diuretic, diaphoretic and anti-inflammatory; leaf juice as laxative, diuretic, emmenagogue and astringent; whole plant as fish poison.</td>
</tr>
<tr>
<td>Asclepias unguiculata L.</td>
<td>Valenalo</td>
<td>Asclepiadaceae</td>
<td>Juice of roots as antihelminthic; crushed leaves for blood coagulation, externally on cuts and wounds.</td>
</tr>
<tr>
<td>Albizia chinenis (Osb.) Morel</td>
<td>Vang</td>
<td>Mimosaceae</td>
<td>Infusion of bark in cuts, wounds, skin diseases and scabies; plant as fish poison.</td>
</tr>
<tr>
<td>Albizia lebbeck (L.) Bentli</td>
<td>Thingmi</td>
<td>Mimosaceae</td>
<td>Wood, timber and fuelwood.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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<tr>
<td><em>Albizia odoratissima</em> (L.f.) Benth.</td>
<td>Kargtek</td>
<td>Mimosaceae</td>
<td>Bark paste externally in leprosy and ulcers; leaves fried in ghee in cough and cold.</td>
</tr>
<tr>
<td><em>Albizia procera</em> (Roxb.) Benth.</td>
<td>Kargtek-pa</td>
<td>Mimosaceae</td>
<td>Bark in fish poisoning; leaves as poultice to ulcers and insecticide.</td>
</tr>
<tr>
<td><em>Allium cecop L.</em></td>
<td>Purun-seh</td>
<td>Liliaceae</td>
<td>Bulb as diuretic, expectorant, aphrodisiac and stimulant; freshly cut bulbs used externally in cestode bite.</td>
</tr>
<tr>
<td><em>Allium sativum L.</em></td>
<td>Purun-seh</td>
<td>Liliaceae</td>
<td>Bulb as diuretic, expectorant, aphrodisiac and stimulant. In cough and cold, fever, febrile, bulb juice as cardiotonic, tonic, in dyspepsia, skin diseases, etc.</td>
</tr>
<tr>
<td><em>Aloe nepalensis</em> D.Don</td>
<td>Almae</td>
<td>Bromeliaceae</td>
<td>Root bark for diarrhoea and stem bark as antispasmodic.</td>
</tr>
<tr>
<td><em>Alocasia fusicata</em> (Roxb.) Schott</td>
<td>Bailing</td>
<td>Araceae</td>
<td>Juice of the plant on snake bite.</td>
</tr>
<tr>
<td><em>Alpinia bracetic</em> Roxb.</td>
<td>Aichal</td>
<td>Zingiberaceae</td>
<td>Paste of rhizome mixed with water to treat dysentery.</td>
</tr>
<tr>
<td><em>Alpinia ganduta</em> (L.) Swarz</td>
<td>Aichal</td>
<td>Zingiberaceae</td>
<td>Rhizome paste in rheumatism, fever, leucoidal problems, canminative and flavouring agents.</td>
</tr>
<tr>
<td><em>Alpinia malaccensis</em> (Burm. f.) Roxb.</td>
<td></td>
<td>Zingiberaceae</td>
<td>Fruit with salt used as emetic.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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<tr>
<td>Alstonia scholaris (L.) R. Br.</td>
<td>Theurum</td>
<td>Apocynaceae</td>
<td>Bark as tonic and febrifuge, in diarrhoea, dysentery, snake bite, worm and externally in sores and ulcers; milky juice to ulcers.</td>
</tr>
<tr>
<td>Amaranthus cruentus L.</td>
<td>Zo-ong</td>
<td>Amaranthaceae</td>
<td>Root boiled with leaves of Prazia armaturia and used for urethritis.</td>
</tr>
<tr>
<td>Amaranthus viridis L.</td>
<td>Zanaza</td>
<td>Amaranthaceae</td>
<td>Leaves for whole plant in snake bite and scorpion sting.</td>
</tr>
<tr>
<td>Amaranthus occidentalis L.</td>
<td>-</td>
<td>Lythraceae</td>
<td>Leaves in blisters, rheumatism, fever and skin diseases.</td>
</tr>
<tr>
<td>Anisantha maximowiczii Roch.</td>
<td></td>
<td>Zingiberaceae</td>
<td>Root soaked or flower buds are taken raw or boiled to reduce blood pressure.</td>
</tr>
<tr>
<td>Ananas comosus (L.) Merrill.</td>
<td>Lakhubhai</td>
<td>Bromeliaceae</td>
<td>Inner of leaves as anthelmintic; fruit juice as antiseptic and quips fruit as abortifacient; fruit and leaves used in typhoid.</td>
</tr>
<tr>
<td>Anathronis laxiflora (Burm.) Lindau</td>
<td>Hlochang vawm</td>
<td>Acanthaceae</td>
<td>Leaves for tonsillitis.</td>
</tr>
<tr>
<td>Anathronis paniculata (Burm. f.) Wallich et Nees</td>
<td>Hukhpaui</td>
<td>Acanthaceae</td>
<td>Plants as febrifuge, tonic, anthelmintic in dysentery and dyspepsia; plant decoction in fever; roots and leaves as febrifuge, stomachic, tonic and anthelmintic.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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<tr>
<td><em>Angiopteris erecta</em> (Forst.) Hoffm.</td>
<td>Artiłatadupui</td>
<td>Angiopteridaceae</td>
<td>Paste of the plants as an ingredient of poultice to cure bone fractures.</td>
</tr>
<tr>
<td><em>Anotodendron paniculatum</em> A DC</td>
<td><em>Thei-kelii</em></td>
<td>Arecaceae</td>
<td>Root bark for placenta problems; fruits edible</td>
</tr>
<tr>
<td><em>Anogeissus acuminatus</em> (Roxb. ex DC.) Guillemin &amp; Perrottet</td>
<td><em>Zaram</em></td>
<td>Combretaceae</td>
<td>Decoction of barks is given in diarrheas and externally applied in burns and in sprains.</td>
</tr>
<tr>
<td><em>Antidesma bunius</em> (L.) Spreng.</td>
<td></td>
<td>Euphorbiaceae</td>
<td>Leaves antidote to snake poison and in syphilis.</td>
</tr>
<tr>
<td><em>Aponosa octandra</em> (Burch.-Ham. ex D.Don) Vickery</td>
<td>Cihluwmal</td>
<td>Euphorbiaceae</td>
<td>Decoction of barks is given in stomach trouble and also in low blood pressure.</td>
</tr>
<tr>
<td><em>Aspidaria rhodopetala</em> (Linn.) Linn.</td>
<td></td>
<td>Thymelaceae</td>
<td>Wood as stimulant, tonic, aphrodisiac, carminative, astringent, also in diarrheas, constipation, vomiting and in snake bite.</td>
</tr>
<tr>
<td><em>Arachis hypogea</em> L.</td>
<td>Badam</td>
<td>Fabaceae</td>
<td>Unripe fruits as h mascot; fruits and oil as astringent; oil as substitute for olive-oil and also as emollient.</td>
</tr>
<tr>
<td><em>Arachis monaderm</em> (Roxb.)</td>
<td>Aralite</td>
<td>Mimosaceae</td>
<td>Plants in rice poison; seeds in diabetes; decoction of leaves for growth of hair and for toothache.</td>
</tr>
<tr>
<td><em>Ardisia colorata</em> Roxb.</td>
<td></td>
<td>Myrsinaceae</td>
<td>Roots as febrifuge in diarrheas and in dysentery.</td>
</tr>
<tr>
<td>Name</td>
<td>Landscape</td>
<td>Family</td>
<td>Uses</td>
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<tr>
<td>Androca macrantha Roth.</td>
<td>Binh Plai</td>
<td>Myristicae</td>
<td>Root decoction for rheumatism and against pain in several diseases; juice of crushed roots boiled with Smilax spp. and Dracaena aromatica used for eye problems.</td>
</tr>
<tr>
<td>Androca polyphylla Wallr. et DC.</td>
<td>Saikewi</td>
<td>Myristicae</td>
<td>Root paste with cool water for external bleeding and with hot water for internal bleeding after childbirth.</td>
</tr>
<tr>
<td>Androca volubilis Roth.</td>
<td>-</td>
<td>Myristicae</td>
<td>Roots used as fabric dye, in diarrhoea and rheumatism.</td>
</tr>
<tr>
<td>Aracax sikkimensis T.</td>
<td>Knawing</td>
<td>Arecaceae</td>
<td>Roots as a substitute for cinnamon, as an antiseptic and as medicine.</td>
</tr>
<tr>
<td>Areca catechu L.</td>
<td>Dial</td>
<td>Arecaceae</td>
<td>As a substitute for cinnamon.</td>
</tr>
<tr>
<td>Areca catechu [O. Kuntze] Merr.</td>
<td>Tzapekhi</td>
<td>Arecaceae</td>
<td>Roots used in stomacha and in pregnancy; outer fleshy layer of fruit used as fish poison; young shoots eaten raw.</td>
</tr>
<tr>
<td>Areca catechu L.</td>
<td></td>
<td>Arecaceae</td>
<td>Plants used in bowel diseases.</td>
</tr>
<tr>
<td>Areca catechu L.</td>
<td></td>
<td>Arecaceae</td>
<td>Uses.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
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</tr>
<tr>
<td>Artemisia nilgirica (C.B. Clarke)</td>
<td>Sai</td>
<td>Asteraceae</td>
<td>Plants as antispasmodic, anti-inflammatory and in stomach problems; root as tonic and antispasmodic; leaves and flowering twig in asthma, diseases of brain, etc.; decoction of leaves in malaria and intestinal worms.</td>
</tr>
<tr>
<td>Artocarpus chama Buch.-Ham.</td>
<td>Takawng</td>
<td>Moraceae</td>
<td>Decoction of bark in diarrhoea.</td>
</tr>
<tr>
<td>Artocarpus odah Miq.</td>
<td>Theitd</td>
<td>Moraceae</td>
<td>Seized leaf as purgative; bark powder on sores, paste on pimples and cracked skin; leaves as fodder.</td>
</tr>
<tr>
<td>Artocarpus heterophyllus Lam.</td>
<td>Lamkhuang</td>
<td>Moraceae</td>
<td>Roots in diarrhoea; leaves in skin diseases and anisodote to snake bite; unripe fruits used as astringent; decoction of plants in swellings; ripe fruits as laxative.</td>
</tr>
<tr>
<td>Asparagus racemosus Wold.</td>
<td>Askelawk</td>
<td>Asparagacae</td>
<td>Roots as refrigerant, demulcent, diuretic, antispasmodic, galactagogue, in dysentery, diarrhoea and in veterinary medicine.</td>
</tr>
<tr>
<td>Averrhoa carambola L.</td>
<td>Theibet-awt.</td>
<td>Averrhoacae</td>
<td>Dried fruits in fever, jaundice; ripe fruits in piles and in relieving thirst and febrile excitement.</td>
</tr>
<tr>
<td>Azadirachta indica A. Juss.</td>
<td>Nimbing</td>
<td>Meliaceae</td>
<td>Roots, bark, flowers, leaves, fruits and poisonous; leaf paste used in skin diseases, ulcer; fruits used in leprosy; seeds used in inflammation.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
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<td>Uses</td>
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<tr>
<td>Baccaurea ramiflora Lou.</td>
<td>Pangkei</td>
<td>Euphorbiaceae</td>
<td>Bark dust as purgative</td>
</tr>
<tr>
<td>Bambusa tulda Roth.</td>
<td>Rawthoe</td>
<td>Poaceae</td>
<td>Young shoots as vegetable; frayed outer skin is applied to stop bleeding</td>
</tr>
<tr>
<td>Barleria cristata L.</td>
<td>—</td>
<td>Acanthaceae</td>
<td>Plant paste in snake bite and cough; roots and leaves to relieve swellings</td>
</tr>
<tr>
<td>Barleria strigosa Wild.</td>
<td>—</td>
<td>Acanthaceae</td>
<td>Roots in spasmodic swellings</td>
</tr>
<tr>
<td>Barringonia ammunata (L.) Cavaiu.</td>
<td>—</td>
<td>Lecythidaceae</td>
<td>Decoction of root as cooling agent, leaves and roots as tonic; Juice of leaves in diarrhoea; seed powder as expectorant; bark, root and seeds as fish poison</td>
</tr>
<tr>
<td>Bauhinia purpurea L.</td>
<td>Vausawang</td>
<td>Caesalpinaceae</td>
<td>Root carminative; bark as astringent, in diarrhoea and skin diseases; flowers as laxative; plant yields gum and bark yields tannin</td>
</tr>
<tr>
<td>Bauhinia variegata L.</td>
<td>Vausawang, Vushe</td>
<td>Caesalpinaceae</td>
<td>Root as antidote to snake bite, decoction in dyspepsia; bark as astringent, tonic, in skin diseases, ulcers and sores; dried buds in diarrhoea, diversinity and in bilious; leaves as fodder</td>
</tr>
<tr>
<td>Name</td>
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<td>Family</td>
<td>Uses</td>
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<tr>
<td><em>Begonia inflata</em> C.R. Clarke</td>
<td>Sekhuphiru</td>
<td>Begoniaceae</td>
<td>Plant damage in dysentery</td>
</tr>
<tr>
<td><em>Begonia picta</em> Smith</td>
<td>Lainamangadaswa</td>
<td>Begoniaceae</td>
<td>Plant juice is given to cure leeches.</td>
</tr>
<tr>
<td><em>Begonia ciliata</em> (Haw.) Stem.</td>
<td>Pandamzawu</td>
<td>Saxifragaceae</td>
<td>Plant paste externally on boil and orally for dissolving stones in the kidney; roots as tonic, in fever, pulmonary trouble, and in diarrhoea.</td>
</tr>
<tr>
<td><em>Betula ahoides</em> Buch.-Ham. ex D. Don</td>
<td>Nhlang</td>
<td>Betulaceae</td>
<td>Decoction of plant in snake bite, and bark in fever.</td>
</tr>
<tr>
<td><em>Bidens pilosa</em> L.</td>
<td>Vekelaphatul</td>
<td>Asteraceae</td>
<td>Leaf juice externally on swollen glands.</td>
</tr>
<tr>
<td><em>Bischofia javanica</em> Blume</td>
<td>Khuanthi</td>
<td>Euphorbiaceae</td>
<td>Juice of leaves for sours and throat problems; leaves as fodder.</td>
</tr>
<tr>
<td><em>Bixa orellana</em> L.</td>
<td>Ravengen</td>
<td>Bixaceae</td>
<td>Root as purgative and antirheumatic; seed powder for gonorrhea, anti-epidemic and as antirheumatic.</td>
</tr>
<tr>
<td><em>Blumea densiflora</em> DC</td>
<td>Buarthau</td>
<td>Asteraceae</td>
<td>Plants as fish-poison and decoction as expectorant; leaves with <em>Centella asiatica</em> in fever and with <em>Plantago major</em> for diabetes.</td>
</tr>
<tr>
<td><em>Blumea lacinia</em> (Burm.f.) DC</td>
<td></td>
<td>Asteraceae</td>
<td>Leaves as anthelmintic and insect repellent.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Root paste in cholera; juice of leaves as febrifuge, stimulant and diuretic; plant yields essential oil containing camphor.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Use</td>
</tr>
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</tr>
<tr>
<td><em>Blumea laciniata</em> (Roeb.) DC</td>
<td>Khuanglawi</td>
<td>Asteraceae</td>
<td>Roots along with those of <em>Butus superba</em>, <em>Vishnu bharadwajii</em> and <em>Cissus repanda</em> used in snake bite, root paste mixed with water and drank for snake bite.</td>
</tr>
<tr>
<td><em>Blumea lanceolata</em> (Roeb.) Bruce</td>
<td>Doem</td>
<td>Asteraceae</td>
<td>Juice of leaves applied to cure wounds and chronic ulcers and also on animal sores to kill worms, root infusion in dysentery, suspension of boiled leaves to cure bronchitis, asthma, cancer and liver ailments.</td>
</tr>
<tr>
<td><em>Blumea riparia</em> (Blume) DC.</td>
<td>—</td>
<td>Asteraceae</td>
<td>Leaves as antispasmodic.</td>
</tr>
<tr>
<td><em>Borassus flabellifer</em> L.</td>
<td>Sa-li</td>
<td>Areaceae</td>
<td>Root as cooling reagent; juice of plant as diuretic and also in dysentery; fruit pulp is nutritious and demulcent; leaves for dressing.</td>
</tr>
<tr>
<td><em>Borreria triangulata</em> Wall. ex Hook et Grev.</td>
<td>—</td>
<td>Ophiorrhizaceae</td>
<td>Plants for diarrhea, urinogenital problems and in jaundice.</td>
</tr>
<tr>
<td><em>Borreria triangulata</em> Wall. ex Hook et Grev.</td>
<td>—</td>
<td>Ophiorrhizaceae</td>
<td>Plants for diarrhea, urinogenital problems and in jaundice.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
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</tr>
<tr>
<td>Bougainvillea spectabilis Willd.</td>
<td>Santan</td>
<td>Nyctaginaceae</td>
<td>Paste of spines applied externally on ulcers.</td>
</tr>
<tr>
<td>Brassica napus L.</td>
<td>Antam</td>
<td>Brassicaceae</td>
<td>Roots and seeds used as antiscorbutic; seeds yield oil of colza; leaves as vegetable.</td>
</tr>
<tr>
<td>Brassica rapa L.</td>
<td>An-tam</td>
<td>Brassicaceae</td>
<td>Leaves as vegetable; seeds as antiscorbutic.</td>
</tr>
<tr>
<td>Buddleja asiatica Lou.</td>
<td>Sial, Serial</td>
<td>Buddlejaceae</td>
<td>Plants used as abortifacient.</td>
</tr>
<tr>
<td>Butea monosperma (Linn.) Taub.</td>
<td>-</td>
<td>Fabaceae</td>
<td>Bark and seeds in snake bite; seeds as anthelmintic; leaves as tonic and astringent; flowers as astringent, deporative and diuretic.</td>
</tr>
<tr>
<td>Callicarpa arborea Roxb.</td>
<td>Frenkisch</td>
<td>Verbenaceae</td>
<td>Bark paste in skin disease; as tonic carminative etc., used also as fodder; leaves dust in stomachache also.</td>
</tr>
<tr>
<td>Callicarpa nudiflora (Hook f. &amp; Arn)</td>
<td>-</td>
<td>Verbenaceae</td>
<td>Paste of bark externally in headache; her leaves in rheumatic pain, oil of root in stomachache.</td>
</tr>
<tr>
<td>Calycoperic floribunda (Roxb.) Poiret</td>
<td></td>
<td>Combretaceae</td>
<td>Root paste in snake bite; leaves as astringent. laxative, also applied externally for ulcers.</td>
</tr>
<tr>
<td>Camellia hirsuta Wallich</td>
<td>Lohli</td>
<td>Theaceae</td>
<td>Oil extracted used to stumpy fish.</td>
</tr>
<tr>
<td>Camellia sinensis (L.) O. Kuntze</td>
<td>Thingsgu</td>
<td>Theaceae</td>
<td>Leaves as diuretic, stimulant and astringent.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
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</tr>
<tr>
<td>Canarium strictum Rooth.</td>
<td>Brevathing</td>
<td>Bumexaceae</td>
<td>Resin for fixing handle with knives/hammers, etc.; smoke of stem repels mosquitoes, fruits for urinary problems.</td>
</tr>
<tr>
<td>Capraria eustachia Thunb.</td>
<td></td>
<td>Fabaceae</td>
<td>Fruits in hernia, colic, billiour; and as vegetable.</td>
</tr>
<tr>
<td>Canacora diffusa (Vahl) H. Br.</td>
<td></td>
<td>Gentianaceae</td>
<td>Plant paste as alternative nerve tonic and laxative.</td>
</tr>
<tr>
<td>Capsicum annuum L.</td>
<td>Finarshire</td>
<td>Solanaceae</td>
<td>Root juice for uric acid.</td>
</tr>
<tr>
<td>Capsicum frutescens L.</td>
<td>Finarshire</td>
<td>Solanaceae</td>
<td>Fruits as stimulant, in dyspepsia and as vegetable.</td>
</tr>
<tr>
<td>Cardis glabrius (Lour) Merr.</td>
<td>Thairia</td>
<td>Rhizoporiae</td>
<td>Bark in fish; fruits in obeen.</td>
</tr>
<tr>
<td>Carya arbores Rooth.</td>
<td></td>
<td>Lecythinaceae</td>
<td>Bark as antiperspirant, antipruritic, small pox and snake bite; bark and leaves as fish poison; bark and fruits as astringent and demulcent; flowers, juice of fresh fruits with honey in mumps and cold.</td>
</tr>
<tr>
<td>Carica papaya L.</td>
<td>Thingfangna</td>
<td>Cuniculaceae</td>
<td>Milky latex of unripe fruits in skin treatment and as astringent; ripe fruits as diuretic, carminative and in constipation; seeds as</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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</tr>
<tr>
<td>Cassia urens L.</td>
<td>Mehbo. Tun</td>
<td>Arecaceae</td>
<td>Nut applied externally on head in case of hematomas.</td>
</tr>
<tr>
<td>Cassia alata L.</td>
<td>Tushlo</td>
<td>Caesalpiniaceae</td>
<td>Bruised leaves applied on ringworms.</td>
</tr>
<tr>
<td>Cassia fistula L.</td>
<td>Ngingaw</td>
<td>Caesalpiniaceae</td>
<td>Dosection of bark for hepatico-gal.</td>
</tr>
<tr>
<td>Castanopsis echinocarpa Miq.</td>
<td>Itingia</td>
<td>Fagaceae</td>
<td>Extract from stem in mouth and tongue ulcers; endocarp edible.</td>
</tr>
<tr>
<td>Catharantus roseus (L.) G.Don</td>
<td>Kunthuang</td>
<td>Apocynaceae</td>
<td>Plants in diabetes; infusion of leaves orally for treating menorrhagia; flowers are considered anti-cancerous.</td>
</tr>
<tr>
<td>Castoreumgeria linearis (Wein.) K. Larsen</td>
<td>Langaatung</td>
<td>Zingiberaceae</td>
<td>Crushed leaves are used by the Chakmas on the head in vertigo.</td>
</tr>
<tr>
<td>Caulaya gracilis (Sm.) Dandy</td>
<td>Pale</td>
<td>Zingiberaceae</td>
<td>Infusion of rhizomes to cure flatulence, colic and hepatico-gal.</td>
</tr>
<tr>
<td>Ceba pentandra (L.) Guent.</td>
<td>Japaapang</td>
<td>Bombacaceae</td>
<td>Roots in scorpion sting and as diuretic; gum as tonic, astrigent and in bowel problems; young leaves used as emollient; fruits in diabetics: unripe fruits as astrigent and demulcent.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
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</tr>
<tr>
<td>Celastrea punctulata Willd.</td>
<td>–</td>
<td>Celastrea</td>
<td>Bark as abortifacient; seeds as laxative, emetic; stimulant in gout, leprosy; fever and rheumatism; oil of seeds in hiri hiri and as powerful stimulant.</td>
</tr>
<tr>
<td>Celosia argentea L.</td>
<td></td>
<td>Amaranthaceae</td>
<td>Flower paste in menstrual problems, diarrehea and as astringent; used in cough and dysentery.</td>
</tr>
<tr>
<td>Ceratola asiatica (L.) Urban</td>
<td>Hoshbhid,</td>
<td>Apiaceae</td>
<td>Infusion of plant for gasto-enteritis; seven leaves with petide taken for seven days keep high bloood pressure under control.</td>
</tr>
<tr>
<td>Cheilotheca humila (D. Don) Keng</td>
<td>–</td>
<td>Monotropaceae</td>
<td>Roots as sedative, tonic and nervine.</td>
</tr>
<tr>
<td>Chloranthus clusor Link.</td>
<td>–</td>
<td>Chloranthaceae</td>
<td>Decotion of plants as astringent.</td>
</tr>
<tr>
<td>Chukrasia tabularis A. Juss.</td>
<td>Zawugcei</td>
<td>Meliaceae</td>
<td>Bark as astringent; juice of tree is dysenteric.</td>
</tr>
<tr>
<td>Cinamomum bujajhoca (Buch.-Ham.) Sweet</td>
<td>Thakthungum</td>
<td>Lauraceae</td>
<td>Decotion of bark in dyspepsia and liver problems.</td>
</tr>
<tr>
<td>Cinamomum glanduliferum bleissn.</td>
<td>–</td>
<td>Lauraceae</td>
<td>Wood is substitute for cassia, contains camphor.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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<tr>
<td><em>Cinnamomum glaucescens</em> (Nees) Hand.-Mazz.</td>
<td>Khajongz</td>
<td>Lauraceae</td>
<td>Infusion of roots or leaves for cough and cold, bronchitis and pneumonia.</td>
</tr>
<tr>
<td><em>Cinnamomum zanthodes</em> (Buch.-Ham.) Nees &amp; Fisch.</td>
<td>Topatu</td>
<td>Lauraceae</td>
<td>Aromatic bark in gonor; leaves stimulating, carminative used in rheumatism, diarrhoea and scorpion bite.</td>
</tr>
<tr>
<td><em>Cinnamomum verum</em> Presl.</td>
<td>Thakthing</td>
<td>Lauraceae</td>
<td>Bark for vomiting and as spices.</td>
</tr>
<tr>
<td><em>Cinnamomum zeylanicum</em> Preyn</td>
<td>Thakthing</td>
<td>Lauraceae</td>
<td>Bark as astringent, carminative, prevent vomiting and nausea; leaves as spice.</td>
</tr>
<tr>
<td><em>Cirsium shanxiense</em> Petrak</td>
<td>Leshing</td>
<td>Asteraeae</td>
<td>Roots applied externally for ulcers, cuts, wounds and taken orally in inflammation; stems and leaves used as antiperiodic.</td>
</tr>
<tr>
<td><em>Cissampetes pareira</em> L. var. hirtula (Buch.-Ham. ex DC.) Forssk.</td>
<td>-</td>
<td>Menispermacae</td>
<td>Roots used as antiperiodic, diuretic, purgative, in snake-bite, cough, urinary troubles, dyspepsia, diasthenia and leaves paste externally on itch.</td>
</tr>
<tr>
<td><em>Citrus aurantium</em> L.</td>
<td>Siso</td>
<td>Rutaceae</td>
<td>Fruit juice is given as refrigerant, analgesic and in stomachic.</td>
</tr>
<tr>
<td><em>Citrus limetta</em> Rius.</td>
<td>Sotrowk</td>
<td>Rutaceae</td>
<td>Roots as anthelmintic, in constipation, vomiting and in urinary problems. Dopers used as astringent and stimulant; ripe fruits juice taken as tonic and stimulant.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
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<tr>
<td><em>Citrus sinensis</em> (L.) Osbeck</td>
<td>Serdham</td>
<td>Rutaceae</td>
<td>Decoction of leaves used for hating in malarial fever.</td>
</tr>
<tr>
<td><em>Clerodendrum phalaenoxanthum</em></td>
<td>Phailmum</td>
<td>Verbenaceae</td>
<td>Roots as an ingredient for treatment of abdominal tumor in combination with <em>Carlina pinnata</em>, <em>Clerodendrum multiflora</em>, <em>Mussaenda macrophylla</em> and <em>Trevesia pterana</em>; paste of roots applied gently in abdominal cancer once daily for a week.</td>
</tr>
<tr>
<td><em>Clerodendrum serratum</em> (L.) Moon</td>
<td>Phailmamank</td>
<td>Verbenaceae</td>
<td>Decoction of leaves for high blood pressure, diabetes and disturbed breast milk</td>
</tr>
<tr>
<td><em>Clerodendrum viscosum</em> Vell.</td>
<td>Phailam</td>
<td>Verbenaceae</td>
<td>Roots in malarial fever, leaves in fever snake bile; boiled leaves with oil in ophthalmia; decoction of leaves is given in high blood pressure and jaundice.</td>
</tr>
<tr>
<td><em>Coffee arabica</em> L.</td>
<td>Kafsi</td>
<td>Rubiaceae</td>
<td>Seed powder as diuretic.</td>
</tr>
<tr>
<td><em>Cox lacryma jobi</em> L.</td>
<td>Bingil</td>
<td>Poaceae</td>
<td>Seeds as tonic, diuretic, roots in menstrual disorder and also as a diuretic and blood purifier.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
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</tr>
<tr>
<td>Colebrookea oppositifolia Smith</td>
<td>-</td>
<td>Lamiales</td>
<td>Roots in epilepsy, leaves paste on wounds.</td>
</tr>
<tr>
<td>Coleococca sessilenta (L.) Schott</td>
<td>Salt, Dead</td>
<td>Apiaceae</td>
<td>Juice of petals in bee sting.</td>
</tr>
<tr>
<td>Colysis kersteliana (Wallich ex Mett.) Prett</td>
<td>Kawiteber</td>
<td>Polypodiaceae</td>
<td>Rhizome as an ingredient of poultice to treat bone fracture.</td>
</tr>
<tr>
<td>Combretum flagocarpm C.B. Clarke</td>
<td>Leihuisen</td>
<td>Combretaceae</td>
<td>Leaf juice on cuts and wounds to stop bleeding.</td>
</tr>
<tr>
<td>Congea tomentosa Roth.</td>
<td>Sananthru</td>
<td>Verbenaceae</td>
<td>The plant is considered as the best animal medicine for expelling sore worms.</td>
</tr>
<tr>
<td>Coryza benariensis (L.) Cuyn.</td>
<td>Buer-zem</td>
<td>Asteraceae</td>
<td>Roots for dropsy; plants in piles, to promote perspiration; lower juice in conjunctivitis; seeds antihelmintic.</td>
</tr>
<tr>
<td>Cordia dichotoma Forst.</td>
<td>Muk</td>
<td>Boraginaceae</td>
<td>Infusion of bark with leaves for expelling retained placenta in females on child birth.</td>
</tr>
<tr>
<td>Cordia wallichii G. Don</td>
<td>Muk</td>
<td>Boraginaceae</td>
<td>Infusion of leaves and barks for expelling retained placenta in females (on child birth).</td>
</tr>
<tr>
<td>Corylus jacquemontii Ehrh.</td>
<td>-</td>
<td>Betulaceae</td>
<td>Nuts as tonic.</td>
</tr>
<tr>
<td>Cuscuta spectorsse (Kuemig) E. Sm.</td>
<td>-</td>
<td>Zingiberaceae</td>
<td>Roots as astringent, purgative, depurative, stimulant tonic, anthelmintic and in snake bite.</td>
</tr>
<tr>
<td>Name</td>
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</tr>
<tr>
<td>Crotalaria juncea L.</td>
<td>Turnhong</td>
<td>Fabaceae</td>
<td>Seeds used to purify blood, in psoriasis, anemia; grow on livestock</td>
</tr>
<tr>
<td>Crotalaria specabilis Roth</td>
<td>-</td>
<td>Fabaceae</td>
<td>Plants in scabies</td>
</tr>
<tr>
<td>Croton roxburghii Balak.</td>
<td>-</td>
<td>Euphorbiaceae</td>
<td>Bark in liver problems and sprains; bark, roots, fruits and seeds</td>
</tr>
<tr>
<td>Cucumis sativus L.</td>
<td>Fangtura</td>
<td>Cucurbitaceae</td>
<td>Juice of stem and leaves in high blood pressure.</td>
</tr>
<tr>
<td>Cucurbita maxima Duch. ex L.</td>
<td>Mai</td>
<td>Cucurbitaceae</td>
<td>Seeds in ringworm and also as anthelmintic and tonic; fruit pulp used as poultice in burns, boils and inflammation</td>
</tr>
<tr>
<td>Curculina crassifolia Hook.</td>
<td>Phuiphik</td>
<td>Amaryllidaceae</td>
<td>Juice of tuber in stomachache.</td>
</tr>
<tr>
<td>Curcuma longa L.</td>
<td>Aieng</td>
<td>Zingiberaceae</td>
<td>Rhizome as tonic, carminative, blood purifier, antiperiodic, in dysentery, diarrhoea, cholera, in sprains and wounds; decoction of rhizome in conjunctivitis; fresh juice in skin diseases and as antiperspiration and for skin infection.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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</tr>
<tr>
<td><em>Cynodon dactylon</em> (L.) Pers.</td>
<td>Phairuulhin</td>
<td>Poaceae</td>
<td>Decoction of roots in piles to stop bleeding; decoction of plant as astringent, in cuts and wounds.</td>
</tr>
<tr>
<td><em>Dalbergia pinnata</em> (Lour.) Prain</td>
<td>Trongtengra</td>
<td>Fabaceae</td>
<td>Roots as anthelmintic.</td>
</tr>
<tr>
<td><em>Dalbergia velobills</em> Rottb.</td>
<td></td>
<td>Fabaceae</td>
<td>Roots; juice in goose; juice of leaves in throat problems.</td>
</tr>
<tr>
<td><em>Datura metel</em> L.</td>
<td></td>
<td>Solanaceae</td>
<td>Roots, leaves and seeds in fever, diarrhoea, skin disease, cerebral and cutaneous problems.</td>
</tr>
<tr>
<td><em>Deeringia amaranthoides</em> (Lamk.) Mett.</td>
<td></td>
<td>Amaranthaceae</td>
<td>Roots as sterility; leaves applied externally to sores.</td>
</tr>
<tr>
<td><em>Dentrobaun demudens</em> D.Don</td>
<td>Nambanboshen</td>
<td>Orchidaceae</td>
<td>Drops of water extract are taken orally as a strong narcotic.</td>
</tr>
<tr>
<td><em>Dentrocalamus hamiltonii</em> Noes. &amp; Att. ex Murr.</td>
<td>Pbudra</td>
<td>Poaceae</td>
<td>Young shoots as vegetables; fruits eaten in time of famine and also for low blood pressure.</td>
</tr>
<tr>
<td><em>Dentrocalamus strigosus</em> (Roth.) Ness.</td>
<td>Tursing</td>
<td>Poaceae</td>
<td>Silicious matter as tonic and astringent; leaves edible to animals.</td>
</tr>
<tr>
<td><em>Dendrocalamus sinuatus</em> (Blume) Chew</td>
<td>Thukpa</td>
<td>Urticaceae</td>
<td>Boiled root water for jaundice; plant used as poison.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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</tr>
<tr>
<td>Desmodium panpratense (L.) DC.</td>
<td>-</td>
<td>Rubiaceae</td>
<td>Roots as astringent, tonic, Olivier, in cough, cold, fever, vomiting, asthma, snake bite and scorpion sting; roots and seeds as febrifuge and anti-inflammatory.</td>
</tr>
<tr>
<td>Desmodium uterus (Annu.) Morex</td>
<td>-</td>
<td>Fabaceae</td>
<td>Leaf paste externally for injuries.</td>
</tr>
<tr>
<td>Desmos chinensis Lour.</td>
<td>-</td>
<td>Amaranthaceae</td>
<td>Decoction of roots in dysentery and vertigo</td>
</tr>
<tr>
<td>Desmos longiflorus (Roxb.) Balfour</td>
<td>Chiri</td>
<td>Amaranthaceae</td>
<td>Flowers act as an ingredient in care chronic ulcers.</td>
</tr>
<tr>
<td>Dichota fruticosa Lour.</td>
<td>Klawak demilunai</td>
<td>Saxifragaceae</td>
<td>Roots and young shoots are astringent and febrifuge; roots and leaves are given to cure malaria.</td>
</tr>
<tr>
<td>Dichrocephala integrifolia (L.) O. Kuntze</td>
<td>Vawdekk-kungu</td>
<td>Asteraceae</td>
<td>Young shoots in diarrhoea.</td>
</tr>
<tr>
<td>Dichrocephala integrifolia (L.) O. Kuntze</td>
<td>-</td>
<td>Asteraceae</td>
<td>Decoction of plants as a tonic.</td>
</tr>
<tr>
<td>Dieresea longiloba Meiss</td>
<td>-</td>
<td>Acanthaceae</td>
<td>Decoction of plants as a tonic.</td>
</tr>
<tr>
<td>Dillenia indica L.</td>
<td>Kowribinde</td>
<td>Dilleniaceae</td>
<td>Bark and leaves as astringent; fruits as tonic, laxative and in abdominal pain; juice of fruits with sugar in cough and fever; juice of bark. leaves and fruits in cancer and diarrhoea.</td>
</tr>
<tr>
<td>Dimocarpus longan Lour.</td>
<td>Theefehumng</td>
<td>Sapindaceae</td>
<td>And as tonic and refrigerant in fever; fruits in stenometric and anti-convulsive.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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</tr>
<tr>
<td><em>Dioscorea alata</em> L.</td>
<td>Bachin</td>
<td>Dioscoreaceae</td>
<td>Decoction of tubers in leprosy, piles and gangrene</td>
</tr>
<tr>
<td><em>Dioscorea bulbifera</em> L.</td>
<td>Rambahna</td>
<td>Dioscoreaceae</td>
<td>Tubers in dysentery, piles, syphilis and applied externally to ulcers.</td>
</tr>
<tr>
<td><em>Dioscorea pentaphylla</em> L.</td>
<td>–</td>
<td>Dioscoreaceae</td>
<td>Tubers as tonic and applied externally to swellings.</td>
</tr>
<tr>
<td><em>Disopyron tropica</em> Ham</td>
<td>–</td>
<td>Rheumaceae</td>
<td>Fresh gum from stems for toothache</td>
</tr>
<tr>
<td><em>Diplazium maximum</em> (D.Don) C. Chatt.</td>
<td>Chakwikeshi</td>
<td>Athyriaceae</td>
<td>Crushed rootstock with those of <em>Angiopteris evecta</em>, <em>Corisca hamiltonii</em> and stems of <em>Rhaphidophora decursiva</em> and <em>R. hookeri</em> to treat fracture.bird,young leaves as vegetable.</td>
</tr>
<tr>
<td><em>Diperocarpus turbinatus</em> Gaertn.</td>
<td>Lawningthing</td>
<td>Dipsacaceae</td>
<td>Extracted resin in ringworms, ulcers, skin problems and in gonor.</td>
</tr>
<tr>
<td><em>Dracaena spicata</em> Roxb.</td>
<td>Plumbrin</td>
<td>Liliaceae</td>
<td>Root juice for stomachache.</td>
</tr>
<tr>
<td><em>Drosera peltata</em> Sm.</td>
<td>–</td>
<td>Droseraceae</td>
<td>Plants used in the preparation of gold &quot;Bassma&quot; which is used as antisyphilis and alternative.</td>
</tr>
<tr>
<td><em>Dryandra diandra</em> Blume</td>
<td>Paripachhi</td>
<td>Caryophyllaceae</td>
<td>Juice of plant as laxative and antifebrile.</td>
</tr>
<tr>
<td>Name</td>
<td>Common Name</td>
<td>Family</td>
<td>Uses</td>
</tr>
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<td>-------------------------------------------</td>
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</tr>
<tr>
<td>Dasyphyllum gilolumnum (Buch.-Ham.) Mic.</td>
<td>Thangthapui</td>
<td>Meliaceae</td>
<td>Decoration of leaves and buds in diarrhea and dysentery.</td>
</tr>
<tr>
<td>Florencea aurata Schott &amp; Endl. ex Meiss.</td>
<td>Sarulpi</td>
<td>Harsignaceae</td>
<td>Venoms in earache; problems and as astringent; fruits as astringent; roots in rheumatism.</td>
</tr>
<tr>
<td>Elaeis indica (L.) Gaertn.</td>
<td>–</td>
<td>Paeaceae</td>
<td>Plants in liver problems.</td>
</tr>
<tr>
<td>Embelia ribes Burm. f.</td>
<td>–</td>
<td>Myristaceae</td>
<td>Roots for cough and diarrhoea, decoration of dried fruits for fever, heart problems and in skin diseases.</td>
</tr>
<tr>
<td>Embelia subsessilis (C.B. Clarke) Met.</td>
<td>Ting</td>
<td>Myristaceae</td>
<td>Decoration of leaves for bathing in treatment of small pox; root is taken to cause placenta.</td>
</tr>
<tr>
<td>Embelia tigrinae-montana (Roxb. &amp; Schult.) DC.</td>
<td>–</td>
<td>Myristaceae</td>
<td>Dry skin of fruits in toothache; fruits are pass-medic, carminative and anthelmintic.</td>
</tr>
<tr>
<td>Engelhardtia spirata Leon. et Blume</td>
<td>Hram</td>
<td>Juglandaceae</td>
<td>Bark as fish poison; resin in medicine.</td>
</tr>
<tr>
<td>Evodia foetida Rehbo.</td>
<td>Sainon</td>
<td>Rutaceae</td>
<td>Cut them cap for dysentery and also as cooling agents: stem juice on insect bite.</td>
</tr>
<tr>
<td>Fagraea rhodophylla Sprun.; rubra, rhondei</td>
<td>Kari</td>
<td>Mimosaceae</td>
<td>Stems, bark and seeds poisonous; seeds as fish poison. tonic, antiperiodic; cut stem used as antimalarial bark in ulcers.</td>
</tr>
<tr>
<td>Erica pampae Lindl.</td>
<td>–</td>
<td>Orchidaceae</td>
<td>Plants in medicinal baths for high fever.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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</tr>
<tr>
<td>Erycibe paniculata Rottb.</td>
<td></td>
<td>Convolvulaceae</td>
<td>Baked in cholera.</td>
</tr>
<tr>
<td>Erygium foetidum L.</td>
<td>Bakhawa</td>
<td>Apiaceae</td>
<td>Roots in stomach; juice of leaf in fever, pinworms; plants substitute for coriander and cattle fodder.</td>
</tr>
<tr>
<td>Erythrina variegata L.</td>
<td>Faruah</td>
<td>Fabaceae</td>
<td>Bark as antiseptic, stimulant in liver trouble, antidote to snake bite; leaves as laxative, diuretic; and anthelmintic; juice of leaves is vermifuge and cathartic.</td>
</tr>
<tr>
<td>Eucalyptus macrophylla Hook.</td>
<td>Nvah-shl-thing</td>
<td>Myrtaceae</td>
<td>Leaves as antiseptic in problem of respiration, skin diseases, rheumatism; used in enemias for burns, mosquito repellent; as a expectorant; decoction of leaves as insect repellent; roots as purgative.</td>
</tr>
<tr>
<td>Edaphia nude Lindl.</td>
<td>Nauban</td>
<td>Orchidaceae</td>
<td>Tuber in tumors and bronchitis.</td>
</tr>
<tr>
<td>Eschscholzia californica Loud. ex DC.</td>
<td>Vahlades-xang</td>
<td>Asteraceae</td>
<td>Plants as purgative.</td>
</tr>
<tr>
<td>Eupatoris odoratum L.</td>
<td>Tangsam</td>
<td>Asteraceae</td>
<td>Plants used as fish poison; juice of leaves is applied on cuts and wounds as haemostatic.</td>
</tr>
<tr>
<td>Euphorbia luna L.</td>
<td></td>
<td>Euphorbiaceae</td>
<td>Plant used in worm; staphylic problems and in cough, juice of plant in earache, leaf used for cuts.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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</tr>
<tr>
<td>Fuchsia ligularis Rott.</td>
<td>Chaung</td>
<td>Fuchsiae</td>
<td>Leaves applied on pimples</td>
</tr>
<tr>
<td>Eurya acuminata DC.</td>
<td>Sithne (Ziksen)</td>
<td>Theaceae</td>
<td>Decoction of leaves for colic and stomachache</td>
</tr>
<tr>
<td>Eucalyptus teragonum Rott.</td>
<td></td>
<td>Cunaneae</td>
<td>Plants used as tonic, for fever and stomach problems</td>
</tr>
<tr>
<td>Fagerlindia fasciculata (Roxb.) Tirveng.</td>
<td>Chawmata</td>
<td>Rubiaceae</td>
<td>Leaves applied externally on sores.</td>
</tr>
<tr>
<td>Ficus benghalensis L.</td>
<td>Hinawag</td>
<td>Moraceae</td>
<td>Root fibres in gomashoose, bark used as astrigent, antiseptic, in dysentery, diarrhoea and diabetes; milky juice applied externally in measles and influenza; leaves as fodder and poultice to abscesses; seeds as tonic and cooling agent.</td>
</tr>
<tr>
<td>Ficus falcata Roxb.</td>
<td></td>
<td>Moraceae</td>
<td>Decoction of roots after childbirth</td>
</tr>
<tr>
<td>Ficus bispida L.</td>
<td></td>
<td>Moraceae</td>
<td>Fruit, seed and bark as purgative and emetic.</td>
</tr>
<tr>
<td>Ficus microcarpa L.</td>
<td></td>
<td>Moraceae</td>
<td>Roots, bark and leaves, boiled in oil, are applied externally on wounds and bites; powdered leaves and bark in decoction and poultice; juice of bark in fevers.</td>
</tr>
<tr>
<td>Ficus sericea L.</td>
<td></td>
<td>Moraceae</td>
<td>Roots in dysentery; root not in diabetes; bark as astrigent, milky juice in piles and diarrhoea; fresh as astrigent and stomach problems.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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</tr>
<tr>
<td><em>Ficus religiosa</em> L.</td>
<td>–</td>
<td>Moraceae</td>
<td>Leaves used as fodder</td>
</tr>
<tr>
<td><em>Ficus semicordata</em> Buch.-Ham. ex Sm.</td>
<td>Thepen</td>
<td>Moraceae</td>
<td>Decoction of leaves for jaundice and hepatitis</td>
</tr>
<tr>
<td><em>Ficus sectoria</em> Forest f.</td>
<td>–</td>
<td>Moraceae</td>
<td>Roots and bark in stomachic; juice of roots in urinary and in visceral complaints</td>
</tr>
<tr>
<td><em>Pirmiana celerata</em> (Korth.) K.B.</td>
<td>Kaukhum</td>
<td>Sterculiaceae</td>
<td>Plants for cholera.</td>
</tr>
<tr>
<td><em>Galium elegans</em> Waltl. ex Roth</td>
<td>–</td>
<td>Rubiaceae</td>
<td>Plants in sore throat and chest complaints</td>
</tr>
<tr>
<td><em>Garcinia cowa</em> Korth. ex LA.</td>
<td>Chengiek</td>
<td>Clusiaceae</td>
<td>Decoction of leaves in dysentery and diarrhoea.</td>
</tr>
<tr>
<td><em>Garcinia lampanefolia</em> (G. Don) Roth</td>
<td>Polie</td>
<td>Clusiaceae</td>
<td>Leaf infusion as stomachic and diuretic</td>
</tr>
<tr>
<td><em>Garcinia pedunculata</em> G.Don</td>
<td>Vunnwa</td>
<td>Clusiaceae</td>
<td>Leaves in round worms.</td>
</tr>
<tr>
<td><em>Garcinia sapropia</em> (Buch.-Ham)</td>
<td></td>
<td>Clusiaceae</td>
<td></td>
</tr>
<tr>
<td><em>Madberley</em></td>
<td></td>
<td>Clusiaceae</td>
<td></td>
</tr>
<tr>
<td><em>Garcinia xanthochymus</em> Hook.f. ex T. Andersson</td>
<td>Thehnawse</td>
<td>Clusiaceae</td>
<td>Fruits used as cooling, cholagogue, emmenagogue, antiscorbatic and demulcent.</td>
</tr>
<tr>
<td><em>Gardenia cananulain</em> Roth.</td>
<td>–</td>
<td>Rubiaceae</td>
<td>Fruits as fish poison, larvaeide, cathartic and analgesic.</td>
</tr>
<tr>
<td><em>Garuga pinnata</em> Roth.</td>
<td>Bungby-lamah</td>
<td>Burseraceae</td>
<td>Fruits as stomachic, juice of stems in eye problems, juice of leaves with honey as curtain.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
</tr>
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</tr>
<tr>
<td>Gelsemium elegans Benth.</td>
<td>Hnaatir</td>
<td>Loganiaceae</td>
<td>Small amount of root is taken in stomach ulcers; juice of roots is given in ringworm.</td>
</tr>
<tr>
<td>Gnetospermum tenueflorum (L.) Merr.</td>
<td></td>
<td>Lamiaceae</td>
<td>Roots given in malarial fever; plants in snake bite and scorpion sting; mucopurines in blisters; leaves in ear problems; bronchitis, used as diaphoretic, expectorant and antiperiodic; seeds in uterine problems.</td>
</tr>
<tr>
<td>Geranium nepalense Sweet</td>
<td></td>
<td>Geraniaceae</td>
<td>Plants used in renal diseases and as antiseptic.</td>
</tr>
<tr>
<td>Girardinia diversifolia (Link.) Fries</td>
<td>Kanghai</td>
<td>Urticaceae</td>
<td>Root paste against food allergy.</td>
</tr>
<tr>
<td>Glycosmis pentaphylla (Roxb.) DC.</td>
<td></td>
<td>Rutaceae</td>
<td>Root paste with sugar in low fever; wood in snake bite.</td>
</tr>
<tr>
<td>Gomphila arborescens Roxb.</td>
<td>Tharrawun</td>
<td>Verbenaceae</td>
<td>Juice of leaves as demulcent in gonorrhoea, cough and cold and to remove toad discharges and worms from ulcers; roasted fruit dust externally infiltrated.</td>
</tr>
<tr>
<td>Gnaphalium luteo-album L.</td>
<td></td>
<td>Astereaceae</td>
<td>Leaves as antiseptic, vulnerary, diuretic and febrifuge.</td>
</tr>
<tr>
<td>Gossypium arboreum L.</td>
<td>La</td>
<td>Malvaceae</td>
<td>Roots in fever; seeds in gonorrhoea, cystitis and eye problems.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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</tr>
<tr>
<td>Gynura adora (R.Br.)</td>
<td>Sai thai</td>
<td>Placcontiaceae</td>
<td>Oil from seeds in leprosy and other skin diseases.</td>
</tr>
<tr>
<td>Gynura spp.</td>
<td>Bauzo</td>
<td>Asteenaceae</td>
<td>Decoction of leaves in tuberculosis, cancer, dysentery, stomach ulcer, leaf paste externally in ulcer, scabies, wounds, skin diseases and dandruff.</td>
</tr>
<tr>
<td>Haldea cordifolli (Raddi) Rubiales</td>
<td>Leukdiaep</td>
<td>Rubiaceae</td>
<td>Bark dust as antiseptic and febrifuge, bark juice in stomach; dysentery and diarrhoea, also as vegetable.</td>
</tr>
<tr>
<td>Hedera nepalensii K.Koch</td>
<td>--</td>
<td>Araliaceae</td>
<td>Leaves and berries as stimulant, diaphoretic, catarzial; berries as purgative.</td>
</tr>
<tr>
<td>Hedychium cocconum J.R. Sm.</td>
<td>Aichha</td>
<td>Zingiberaceae</td>
<td>Rhizome paste for bee sting and also applied to ursw against phlebitis.</td>
</tr>
<tr>
<td>Hedychium spicatum Sm. var. spicatum</td>
<td>Anbur</td>
<td>Zingiberaceae</td>
<td>Juice of rhizome for liver problems and body pain.</td>
</tr>
<tr>
<td>Hedychium spicatum var acuminatum Wallach</td>
<td>Anbur</td>
<td>Zingiberaceae</td>
<td>Rosette, used as tonic, stimulant, expectorant, in liver problem, vomiting, stomach, diarrhoea, inflammatory and pain, also used to snake bite.</td>
</tr>
<tr>
<td>Hedychium tensiforin K Schum</td>
<td>Thins wabing</td>
<td>Zingiberaceae</td>
<td>Juice of rhizomes to cure asthma, cough and cold.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
</tr>
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</tr>
<tr>
<td><em>Hedyotis costata</em> (Roxb.) Kurz</td>
<td>–</td>
<td>Rubiaceae</td>
<td>Decoction of roots as lotion for rheumatism.</td>
</tr>
<tr>
<td><em>Hedyotis scamens</em> Roxb.</td>
<td>–</td>
<td>Rubiaceae</td>
<td>Root paste in sprain; plant juice in eye problems.</td>
</tr>
<tr>
<td><em>Helianthus annuus</em> L.</td>
<td>Niharvpur</td>
<td>Asteraceae</td>
<td>Seeds used as diuretic, expectorant, febrifuge, in bronchitis, stomatitis and also in pulmonary and laryngeal affections.</td>
</tr>
<tr>
<td><em>Helicia exccisa</em> (Roxb.) Blume</td>
<td>Shatna</td>
<td>Proteaceae</td>
<td>Decoction of bark taken internally for stomachache, colic, etc.</td>
</tr>
<tr>
<td><em>Helicia robusta</em> (Roxb.) B.B. ex Blume</td>
<td>Pocol toker, sahib-bah</td>
<td>Proteaceae</td>
<td>The plant is used for poultices; bruised leaves for healing sore; decoction of bark for stomachache.</td>
</tr>
<tr>
<td><em>Heliostegium indicum</em> L.</td>
<td>–</td>
<td>Boraginaceae</td>
<td>Leaves applied to ulcers, wounds, insect stings and on boils.</td>
</tr>
<tr>
<td><em>Hemistea imita</em> Bunge ex C.E.C. Fischer</td>
<td>Phawagdamdawi</td>
<td>Asteraceae</td>
<td>Roots in gynaecological diseases.</td>
</tr>
<tr>
<td><em>Hithicus acneus</em> Roxb.</td>
<td>–</td>
<td>Malvaceae</td>
<td>Infusion of roots for hot weather.</td>
</tr>
<tr>
<td><em>Hithicus roo-sinensis</em> L.</td>
<td>Chimpmong-po.</td>
<td>Malvaceae</td>
<td>Leaf as incense, flowers as aphrodisiac.</td>
</tr>
<tr>
<td><em>Hithicus subhirtiflora</em> L.</td>
<td>Lekker-atheru</td>
<td>Malvaceae</td>
<td>Fruits and calyx, cooked with water, taken as vegetable, also used in colic</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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</tr>
<tr>
<td>Hibiscus suaveolens L.</td>
<td>Schnap</td>
<td>Malvaceae</td>
<td>Stems and leaves used in venereal diseases.</td>
</tr>
<tr>
<td>Hibiscus syriacus L.</td>
<td>Sama-rosepur</td>
<td>Malvaceae</td>
<td>Bark and roots in dysentery; leaves given in stomachic; flowers used as diuretic and in skin diseases.</td>
</tr>
<tr>
<td>Hodgsonia macrocarpa (Blume) Cogn.</td>
<td>Kham</td>
<td>Cucurbitaceae</td>
<td>Decoction of seeds is given in female diseases.</td>
</tr>
<tr>
<td>Holarrhena pubescens (Buch.-Ham.)</td>
<td>Thungpa</td>
<td>Apocynaceae</td>
<td>Bark in dysentery, intestinal worms and dropsy; seeds as astringent, tendergum, in fever, dysentery, diarrhoea and intestinal worms.</td>
</tr>
<tr>
<td>Wallich ex G. Don.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homalota riparia Lour.</td>
<td>–</td>
<td>Euphorbiaceae</td>
<td>Decoction of roots in piles, bladder stones and venereal diseases, roots as astringent, diuretic and in urinary problems.</td>
</tr>
<tr>
<td>Houttuynia cordata Thunb</td>
<td>Vaihinsang</td>
<td>Saururaceae</td>
<td>Roots as diuretic; leaves for measles and dysentery.</td>
</tr>
<tr>
<td>Hydrangea serrata (King) Wach</td>
<td>Khawilur</td>
<td>Flaccardiaceae</td>
<td>Fruits as fish poison; seed oil in skin diseases and in leprosy.</td>
</tr>
<tr>
<td>Hymenoxys japonica Thunb.</td>
<td>Hyaivadaw, Dubangpur</td>
<td>Apiaceae</td>
<td>Leaves as tonic, blood purifier in indigestion, nervousness, dysentery and eye sore.</td>
</tr>
<tr>
<td>Hypericum japonicum Thunb. ex Murray</td>
<td>–</td>
<td>Hypericaceae</td>
<td>Plants in asthma, alternative, dysentery and as astringent.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Use</td>
</tr>
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</tr>
<tr>
<td>Hypoxis unguis Lout.</td>
<td>–</td>
<td>Hypoxidaceae</td>
<td>Roots in jaundice.</td>
</tr>
<tr>
<td>Berchemia undulata (Wallis) Iwa.</td>
<td>Thangaihahni</td>
<td>Aquifoliaceae</td>
<td>Bark paste and pig feed for diseases in pigs</td>
</tr>
<tr>
<td>Impatiens chinensis L. var. chinensis</td>
<td>Haiko</td>
<td>Balsaminaceae</td>
<td>Plants used externally for burns and wounds and taken orally in gonorrhoea.</td>
</tr>
<tr>
<td>Imperata cylindrica (L.) Krouch.</td>
<td>Haiko</td>
<td>Poaceae</td>
<td>Roots for intestinal worms.</td>
</tr>
<tr>
<td>Ipomoea alba L.</td>
<td>Haiko</td>
<td>Convolvulaceae</td>
<td>Paste is given to make hire.</td>
</tr>
<tr>
<td>Ipomoea hederacea (L.) Lam.</td>
<td>Kowilhahni</td>
<td>Convolvulaceae</td>
<td>Plants as laxative and used in poultice paste of roots or leaves in scorpion stings.</td>
</tr>
<tr>
<td>Ipomoea nil (L.) Roth</td>
<td>–</td>
<td>Convolvulaceae</td>
<td>Seed paste as purgative.</td>
</tr>
<tr>
<td>Jasminum grandiflorum L.</td>
<td>–</td>
<td>Oleaceae</td>
<td>Plants as anti-inflammatory and diuretic, leaves chewed in mouth ulcers; fresh juice in ear and eye problems; flowers in skin diseases, headache, eye problems and in skin diseases.</td>
</tr>
<tr>
<td>Jasminum nervosum Linn.</td>
<td>Haikha</td>
<td>Oleaceae</td>
<td>Leaf infusion taken internally to cure stomachache and diarrhoea.</td>
</tr>
<tr>
<td>Jasminum sambac L.</td>
<td>–</td>
<td>Oleaceae</td>
<td>Roots in ringworm</td>
</tr>
<tr>
<td>Jatropha curcas L.</td>
<td>Kangalamdawi</td>
<td>Euphorbiaceae</td>
<td>Juice of stems in burns.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
</tr>
<tr>
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</tr>
<tr>
<td>Justicia adhatoda (L.) Nees.</td>
<td>Kawdai</td>
<td>Acanthaceae</td>
<td>Leaves in rheumatism, also as insecticidal, leaves and roots in cough, cold, bronchitis, asthma and pulmonary tuberculosis; flowers, leaves and roots as antiseptic and antispasmodic.</td>
</tr>
<tr>
<td>Justicia simplex D. Don</td>
<td>-</td>
<td>Acanthaceae</td>
<td>Plants used in cough, asthma, rheumatism, back pain, as laxative and diuretic; leaves in ophthalmia and in bone disease.</td>
</tr>
<tr>
<td>Raemygeria rotunda L.</td>
<td>Teklu-par</td>
<td>Zingiberaceae</td>
<td>Plants used in healing of wounds; tuber for mumps; roots in stomachic.</td>
</tr>
<tr>
<td>Aslanche integr (Medik.) H. Kuntze</td>
<td>-</td>
<td>Crassulaceae</td>
<td>Leaves used externally on cuts, wounds, burns and taken orally in cholera; plants poisonous to goat.</td>
</tr>
<tr>
<td>Kyllinga nemoralis (J.R. &amp; G. Forst.) Hatch. &amp; Dale.</td>
<td>-</td>
<td>Cyperaceae</td>
<td>Antidote to poison, refrigerant and in fever.</td>
</tr>
<tr>
<td>Lagerstroemia speciosa (L.) Pers.</td>
<td>Tkado</td>
<td>Lythraceae</td>
<td>Roots as purgative and febrifuge; bark and leaves as purgative; decoction of leaves in jaundice; fruits used in mouth ulcer; seeds as narcotic.</td>
</tr>
<tr>
<td>Laggea crispa (Vahl) Hepper</td>
<td>Ramwaili</td>
<td>Asteraeae</td>
<td>Leaf juice applied externally on chronic ulcer in sore.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
</tr>
<tr>
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</tr>
<tr>
<td><em>Lonsea coriacea</em> (Houtt.) Merr.</td>
<td>Tawitawuuk</td>
<td>Anacardiaceae</td>
<td>Bark and leaf juice applied externally on ulcers, swellings and wounds.</td>
</tr>
<tr>
<td><em>Lantana camara</em> L. var. aculeata (L.) Medicke</td>
<td>Hilingang-par</td>
<td>Verbenaceae</td>
<td>Crushed leaves applied to cuts, ulcers and swellings.</td>
</tr>
<tr>
<td><em>Leea nucula</em> (Burm.f.) Merr.</td>
<td>–</td>
<td>Lecaceae</td>
<td>Roots in diarrhoea and dysentery; decoction of roots in severe taint; roasted leaves applied externally on the head in vertigo.</td>
</tr>
<tr>
<td><em>Lepidagathis incusa</em> Buch.-Hcm. ex D. Don</td>
<td>–</td>
<td>Acanthaceae</td>
<td>Leaves chewed to relieve cough.</td>
</tr>
<tr>
<td><em>Lepidagathis rigida</em> Dalz.</td>
<td>Vangvattu</td>
<td>Acanthaceae</td>
<td>Leaf juice as car drops and to treat tooth worms.</td>
</tr>
<tr>
<td><em>Lepisorus sylvestris</em> Blume</td>
<td>Anangthsun</td>
<td>Uplinaceae</td>
<td>Decoction of leaves for throat pain.</td>
</tr>
<tr>
<td><em>Lilium wallisianum</em> Schults, f.</td>
<td>Badnii</td>
<td>Liliaceae</td>
<td>Dried bulb studied in pastoral problems.</td>
</tr>
<tr>
<td><em>Lindernia ruellioidea</em> (Colrea.)Pernell</td>
<td>–</td>
<td>Scrophulariaceae</td>
<td>Plant paste is given externally in skin worms.</td>
</tr>
<tr>
<td><em>Linostoma decandrum</em> Wallich</td>
<td>–</td>
<td>Icthyacaeae</td>
<td>Stems and fruits in fish poison.</td>
</tr>
<tr>
<td><em>Lithocarpus pachyphylla</em> (Kurz) Rohde</td>
<td>Thii</td>
<td>Fagaceae</td>
<td>Bark as astringent.</td>
</tr>
<tr>
<td><em>Listea cubba</em> (Lour.) Pers.</td>
<td>Seman</td>
<td>Lauraceae</td>
<td>Fruits edible.</td>
</tr>
<tr>
<td><em>Listea monopetala</em> (Korth.) Pers.</td>
<td>Nauthak</td>
<td>Lauraceae</td>
<td>Bark as astringent; in diarrhoea and loss of memory.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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</tr>
<tr>
<td><em>Lobelia angulata</em> Forest</td>
<td>-</td>
<td>Campanulaceae</td>
<td>Leaves in dysentery, diarrhoea, ulcers and in night blindness.</td>
</tr>
<tr>
<td><em>Lonicera macrantha</em> (T. Don) Spreng.</td>
<td>Leibnizens</td>
<td>Caprifoliaceae</td>
<td>Leaf juice in dysentery, dry flowers as diuretic.</td>
</tr>
<tr>
<td><em>Lycopodium japonicum</em> (Thumb.) Sw.</td>
<td>-</td>
<td>Schizaceae</td>
<td>Decoction of young shoots in used as diuretic and cathartic.</td>
</tr>
<tr>
<td><em>Lyonia ovalifolia</em> (Wallich) Drude</td>
<td>Thaughan</td>
<td>Ericaceae</td>
<td>Young twigs poisonous to goats, insects, infusion in skin diseases.</td>
</tr>
<tr>
<td><em>Maesa indica</em> (Roxb.) Wallich</td>
<td>-</td>
<td>Myristaceae</td>
<td>Knots in syphile, leaves as fish poison; berries as anthelmintic.</td>
</tr>
<tr>
<td><em>Maesa montana</em> DC.</td>
<td>Arangeng</td>
<td>Myristaceae</td>
<td>Young shoots in dysentery and stomatitis.</td>
</tr>
<tr>
<td><em>Maesa ramiflora</em> Wallich</td>
<td></td>
<td>Myristaceae</td>
<td>Leaves juice for itches and other skin diseases.</td>
</tr>
<tr>
<td><em>Mahonia lomatia</em> Takeda</td>
<td>Puileng</td>
<td>Berberidaceae</td>
<td>Roots contain alkaloids.</td>
</tr>
<tr>
<td><em>Mahonia pycnantha</em> (Fedde) Takeda</td>
<td>Puileng</td>
<td>Berberidaceae</td>
<td>Berries as diuretic and in dysentery.</td>
</tr>
<tr>
<td><em>Malaleuca leucocarpa</em> (Kunt. A sty-Saw</td>
<td>Sitiha</td>
<td>Euphorbiaceae</td>
<td>Root decoction for stomach problems.</td>
</tr>
<tr>
<td><em>Malaleuca philippensis</em> (Lam.) Muell.-Arg.</td>
<td>Thsiaklai</td>
<td>Euphorbiaceae</td>
<td>Trichomes and glands of fruits applied on scabies and lice.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Use</td>
</tr>
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</tr>
<tr>
<td><em>Mallotus ramburhianus</em></td>
<td>Zadngtenwhlung</td>
<td>Euphorbiaceae</td>
<td>Decoction of leaves is taken to cure diabetes.</td>
</tr>
<tr>
<td><em>Mangifera indica</em></td>
<td>Thehui</td>
<td>Anacardiaceae</td>
<td>Decoction of young leaves in diarrhoea; fruits edible.</td>
</tr>
<tr>
<td><em>Manihot esculenta</em></td>
<td>Pungbal</td>
<td>Euphorbiaceae</td>
<td>Leaf juice applied on headache, skin diseases and on ringworms.</td>
</tr>
<tr>
<td><em>Maratia minuta</em></td>
<td>سستر</td>
<td>Marantaceae</td>
<td>Juice of leaves applied externally on eye problems.</td>
</tr>
<tr>
<td><em>Melastoma kuteiformis</em></td>
<td>Thuathru</td>
<td>Fabaceae</td>
<td>Seeds as purgative and antihelminthic.</td>
</tr>
<tr>
<td><em>Melastoma malabathricum</em></td>
<td>Baiulahen</td>
<td>Melastomataceae</td>
<td>Leaves in dysentery, diarrhoea and in cats; leaves and flowers in leucorrhoea.</td>
</tr>
<tr>
<td><em>Melocalamus mastersii</em></td>
<td>ستیرل</td>
<td>Piniaceae</td>
<td>Juice of stems in influenza.</td>
</tr>
<tr>
<td><em>Melocactus monogynus</em></td>
<td>—</td>
<td>Apocynaceae</td>
<td>Roots, wood and leaves as anti malarial drug; plants as fish poison.</td>
</tr>
<tr>
<td><em>Melothria heterophylla</em></td>
<td>Zawnggaw pweung</td>
<td>Cucurbitaceae</td>
<td>Juice of roots with milk, sugar and yermis for spermatorrhoea.</td>
</tr>
<tr>
<td><em>Mentha arvensis</em></td>
<td>Padina</td>
<td>Lamiaceae</td>
<td>Dried plants as antispasmodic, carminative, refrigerant and diuretic; leaves in asthma.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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</tr>
<tr>
<td><em>Merremia umbellata</em> (L.) Hallier f.</td>
<td>Vavasaasai</td>
<td>Convolvulaceae</td>
<td>Plants in fistula and tumors; seeds used to treat skin diseases; climber tied round the waist to relieve pain; leaves for poulticing.</td>
</tr>
<tr>
<td><em>Merremia vitifolia</em> (Burm.f.) Hallier</td>
<td>-</td>
<td>Convolvulaceae</td>
<td>Root eaten raw in stomach.</td>
</tr>
<tr>
<td><em>Messua ferrea</em> L.</td>
<td>Hershe</td>
<td>Clusiaceae</td>
<td>Bark as astringent; leaves and flowers in snake bite and scorpion sting; flower buds in dysentery; flower as astringent; unripe fruits as aromatic and subdiaphoretic; seed oil in scabies.</td>
</tr>
<tr>
<td><em>Michelia champaca</em> L.</td>
<td>Ngian</td>
<td>Magnoliaceae</td>
<td>Roots as purgative; bark as astringent; expectorant; febrifuge and stimulant; leaves with honey given in colic; flowers oil for ophthalmia and gout; flowers and fruits as antiemetic, tonic, stomachic, carminative, in renal diseases, nausea, fever, etc; seeds and fruits applied externally for healing cracks in feet.</td>
</tr>
<tr>
<td><em>Miconelium minutum</em> (Forst. f.) Wight &amp; Am.</td>
<td>Nautenmaan</td>
<td>Rutaceae</td>
<td>Stem bark for dysentery.</td>
</tr>
<tr>
<td><em>Mikania micrantha</em> korth</td>
<td>Japambo</td>
<td>Asteraceae</td>
<td>Leaf juice on cuts, leaves boiled with <em>Vitis pedunculata</em> are taken against malarial fever, diarrhoea and dysentery.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
</tr>
<tr>
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</tr>
<tr>
<td><em>Milletia psychotropa</em> Benth.</td>
<td>Rulei</td>
<td>Fabaceae</td>
<td>Roots in scabies and skin diseases.</td>
</tr>
<tr>
<td><em>Milletia plicifolia</em> Wight</td>
<td>Ruteng</td>
<td>Fabaceae</td>
<td>Bark and flowers as fish poison.</td>
</tr>
<tr>
<td><em>Mimusops invisa</em> C. Martius ex Cola</td>
<td>Ditlo</td>
<td>Mimosaceae</td>
<td>Infusion of roots to dissolve kidney and gall bladder stones.</td>
</tr>
<tr>
<td><em>Mimusops pudica</em> L.</td>
<td>Hinnur</td>
<td>Mimosaceae</td>
<td>Leaves and roots in piles and fistula; leaves and stems in scorpion sting; leaves paste in hydrocort.</td>
</tr>
<tr>
<td><em>Mirabilis jalapa</em> L.</td>
<td>Anatkhuam</td>
<td>Nyctaginaceae</td>
<td>Roots, boiled with water; taken for diabetes.</td>
</tr>
<tr>
<td><em>Miragyna roundifolia</em> (Roxb.) O. Kuntze</td>
<td>Tinglung, Lingkham</td>
<td>Rubiaceae</td>
<td>Leaves and bark in paralysis and sympathetic nerve endings.</td>
</tr>
<tr>
<td><em>Molineria capitulata</em> (Lour.) Herb.</td>
<td>Phalpek</td>
<td>Hypoxidaceae</td>
<td>Paste of riber for stomachache and in cuts and wounds.</td>
</tr>
<tr>
<td><em>Mollugo penrophyta</em> L.</td>
<td>–</td>
<td>Molluginaceae</td>
<td>Plants in stomach.</td>
</tr>
<tr>
<td><em>Monardica charantia</em> L.</td>
<td>Changkha</td>
<td>Cucurbitaceae</td>
<td>Decoction of fruits and leaves in high blood pressure.</td>
</tr>
<tr>
<td><em>Moiraea hastata</em> (L.) Salis.</td>
<td>–</td>
<td>Pontederiaceae</td>
<td>Plants in insanity, and as a tonic; leaves in wine.</td>
</tr>
<tr>
<td>Name</td>
<td>Localname</td>
<td>Family</td>
<td>Uses</td>
</tr>
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</tr>
<tr>
<td><em>Morinda angustifolia</em> Roxb.</td>
<td>Lem</td>
<td>Rubiaceae</td>
<td>Leaves paste on cracks in the feet.</td>
</tr>
<tr>
<td><em>Moringa oleifera</em> Lam.</td>
<td></td>
<td>Moringaceae</td>
<td>Leaves and flowers as vegetable medicine.</td>
</tr>
<tr>
<td><em>Morus alba</em> L.</td>
<td>Thingheihu</td>
<td>Moraceae</td>
<td>Bark as purgative; fruits edible and as refrigerant in fever and throat problems.</td>
</tr>
<tr>
<td><em>Morus australis</em> Poj.</td>
<td>Lungli</td>
<td>Moraceae</td>
<td>Roots as astringent; bark as purgative; stem juice in sores, leaves boiled with water used in throat problems, fruits as laxative.</td>
</tr>
<tr>
<td><em>Morus macroura</em> Mir.</td>
<td>Hmaheihing</td>
<td>Moraceae</td>
<td>Milky latex externally for sores.</td>
</tr>
<tr>
<td><em>Mucuna nigricans</em> (Lour.) Steudel</td>
<td>Khuangtan</td>
<td>Fabaceae</td>
<td>Stem juice in cough and cold.</td>
</tr>
<tr>
<td><em>Mucuna pruriens</em> (L.) DC.</td>
<td>Ussana</td>
<td>Fabaceae</td>
<td>Roots as purgative, diuretic, febrifuge in kidney problems and in dropsy; leaves given in ulcers; bundles of latex as vermicular, liver problems, gall bladder and parkinson disease.</td>
</tr>
<tr>
<td><em>Murraya koenigii</em> (L.) Spreng.</td>
<td>Dawng</td>
<td>Rutaceae</td>
<td>Prized plant applied externally on burns and itching; leaves for poisoning wounds.</td>
</tr>
<tr>
<td></td>
<td>Apatil</td>
<td>Rutaceae</td>
<td>Plants as tonic; roots, bark, and leaves as carminative and anti diabetic; leaves as febrifuge, in dysentery, kidney pain and eruptions.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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</tr>
<tr>
<td><em>Murraya paniculata</em> (L.) Jack.</td>
<td>Munghi</td>
<td>Rutaceae</td>
<td>Bark of roots is given for body pain; bark and stem given for diarrhea; leaves given en sits, used as stimulant, astringent also given in diarrhea and dysentery.</td>
</tr>
<tr>
<td></td>
<td>Mungthing</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Musa balbisiana</em> Cola</td>
<td>Balhia</td>
<td>Musaceae</td>
<td>Roots used as anthelmintic; stems in hysteria, cholera, dysentery and diarrhoea; leaves in burns; flowers and fruits with card in dysentery.</td>
</tr>
<tr>
<td><em>Musa crotalaria</em> Vahl</td>
<td>Vakep</td>
<td>Rubiaceae</td>
<td>Roots and leaves in coughs; flowers in asthma, fever and dropsy.</td>
</tr>
<tr>
<td><em>Myrica excelsa</em> Ham.</td>
<td>Keifang</td>
<td>Myricaceae</td>
<td>Bark as astringent, carminative and antiseptic; also used in asthma, cough, cold and headache.</td>
</tr>
<tr>
<td><em>Neoboea longifolia</em> (Roxb.) Buxce</td>
<td>Danium</td>
<td>Rubiaceae</td>
<td>Bark tonic, febrifuge, antiseptic and in snake bite, decoction of leaves in stomachach, the ripe fruit warm in kid.</td>
</tr>
<tr>
<td><em>Nerium indicum</em> (Andr.) Schlt.</td>
<td>Finaikhar</td>
<td>Lamiaceae</td>
<td>Root and leaf paste in stomachache, chest pain burns, diarrhea and dysentery.</td>
</tr>
<tr>
<td><em>Nicoiana tabacum</em> L.</td>
<td>Vahiho</td>
<td>Solanaceae</td>
<td>Leaves in skin diseases, scorpion sting, rheumatism and fish poison; also as sedative narcotic, emetic and antispasmodic.</td>
</tr>
<tr>
<td><em>Syzygium indicated</em> (L.) O. Kuntze</td>
<td></td>
<td>Linravhaceae</td>
<td>Dried plants in fever and jaundice; also used as substiute for Chirer.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
</tr>
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</tr>
<tr>
<td>Ocimum americanum L.</td>
<td></td>
<td>Lamiaceae</td>
<td>Leaves in skin diseases.</td>
</tr>
<tr>
<td>Ophioglossum gramineum Wild.</td>
<td></td>
<td>Ophioglossaceae</td>
<td>Plant paste in wounds.</td>
</tr>
<tr>
<td>Oroxylum indicum (L.) Koritz</td>
<td>Andamanpham</td>
<td>Bignoniaceae</td>
<td>Roots back as astringent, tonic, in dysentery, asthma in scorpion sting, fruits as liniment, seeds as purgative.</td>
</tr>
<tr>
<td>Orthosiphon aristatus (Blume) Miq.</td>
<td>Zunthubung</td>
<td>Lamiaceae</td>
<td>Dried leaves for kidney problems; leaf juice for diabetes and as diuretic.</td>
</tr>
<tr>
<td>Oryza sativa (Tri.) Sharma &amp; Shastry</td>
<td>Bath</td>
<td>Poaceae</td>
<td>Decoction of straw in urinary problems and in kidney stone.</td>
</tr>
<tr>
<td>Orspergula malabarica Ker-Gawl.</td>
<td>Balaikased</td>
<td>Melastomataceae</td>
<td>Decoction of leaves in toothache.</td>
</tr>
<tr>
<td>Ornis corniculata L.</td>
<td>Siddhar</td>
<td>Ortiliaceae</td>
<td>Leaves as antiseptic, refrigerant and in stomach.</td>
</tr>
<tr>
<td>Ocyporus pastinata (D. Don) DC.</td>
<td>Khamper, Bulukhampa</td>
<td>Melastomataceae</td>
<td>Root paste in heart, stomach, kidney problems and in bleeding of nose.</td>
</tr>
<tr>
<td>Pueraria tuberosa (Lour.) Maxim.</td>
<td>Vanikkul-ului</td>
<td>Rubiaceae</td>
<td>Plants for rheumatism, leaves as astringent, tonic, guaiacol and in diaphoretics.</td>
</tr>
<tr>
<td>Pugnatia longifolia (Wldl.) K. Schum</td>
<td>Ramsarchangkadam</td>
<td>Bignoniaceae</td>
<td>Paste of leaves and young foliage twig applied to cure bone fracture.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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</tr>
<tr>
<td><em>Parabariah hookeri</em> Pierce</td>
<td>Thakelbuwe</td>
<td>Apocynaceae</td>
<td>Latex applied on cuts and wounds.</td>
</tr>
<tr>
<td><em>Farka timoriaca</em> (DC.) Merr.</td>
<td>Zawragah</td>
<td>Mimosaceae</td>
<td>The skin of young pods scrapped off and made into paste and applied on scabies; green pods used as vegetable.</td>
</tr>
<tr>
<td><em>Passiflora edulis</em> Sim.</td>
<td>Spthei</td>
<td>Passifloraceae</td>
<td>Fruits in jaundice.</td>
</tr>
<tr>
<td><em>Passiflora nepulensis</em> Wallich</td>
<td>Navawima</td>
<td>Passifloraceae</td>
<td>Root juice in fever.</td>
</tr>
<tr>
<td><em>Favetta vechea</em> L. var. tomentosa (Roxb. &amp; Smith) Hook, f.</td>
<td>Thumirul</td>
<td>Rubiaceae</td>
<td>Roots with ginger and rice water to dropsy.</td>
</tr>
<tr>
<td><em>Parinapyrus glaucus</em> (Linn.) Merr.</td>
<td>Nemfibal</td>
<td>Menispermaceae</td>
<td>Roots antidote to snake poison.</td>
</tr>
<tr>
<td><em>Phyllanthus acidus</em> (L.) Skeels</td>
<td>Kawbahlutu</td>
<td>Euphorbiaceae</td>
<td>Fruits edible, and also as astringent; roots in snake bite.</td>
</tr>
<tr>
<td><em>Phyllanthus emblica</em> L.</td>
<td>Sutilu</td>
<td>Euphorbiaceae</td>
<td>Roots and bark as antiseptic; fruits in diarrhea, dysentery, asthma, jaundice, dyspepsia, haemorrhage, cough and cold; exudation from incision on the fruit is external application in inflammation of the eyes.</td>
</tr>
<tr>
<td><em>Phyllanthus fraternus</em> Web.</td>
<td>Mithi-xamlu</td>
<td>Euphorbiaceae</td>
<td>Detection of plants for diabetes and jaundice; leaves chewed to check hiccup</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
</tr>
<tr>
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</tr>
<tr>
<td>Physalis minima L.</td>
<td>Kela-sairawphi</td>
<td>Solanaceae</td>
<td>Leaf juice with mustard oil and water for cancer; fruits as tonic.</td>
</tr>
<tr>
<td>Pterocarpus javanica Blume</td>
<td>Thingdardawi</td>
<td>Simaroubaceae</td>
<td>Back in fever.</td>
</tr>
<tr>
<td>Pileollias bahama (Port.) C. Jeffrey</td>
<td>—</td>
<td>Asteraceae</td>
<td>Infusion of root with milk in chest complaints.</td>
</tr>
<tr>
<td>Pimpinella diversifolia DC.</td>
<td>—</td>
<td>Apiaceae</td>
<td>Plants as carminative.</td>
</tr>
<tr>
<td>Piper betle L.</td>
<td>Paadawng</td>
<td>Piperaceae</td>
<td>Roots as contraceptive; leaves in snake bite and eye problems.</td>
</tr>
<tr>
<td>Piper nigrum L.</td>
<td>—</td>
<td>Piperaceae</td>
<td>Fruits in piles, skin diseases, fever, weakness, vertigo, coma, dyspepsia, etc.</td>
</tr>
<tr>
<td>Piper pusipatus Roxb.</td>
<td>—</td>
<td>Piperaceae</td>
<td>Roots in leprosy.</td>
</tr>
<tr>
<td>Pittosporum aquilinum (DC.) Rehder &amp; Wilson</td>
<td>—</td>
<td>Pittosporaceae</td>
<td>Bark in bronchitis, snake bite, as poisonous and medicinal; oil as tonic, in dysentery and leprosy.</td>
</tr>
<tr>
<td>Plantago major L.</td>
<td>—</td>
<td>Plantaginaceae</td>
<td>Leaves in medicine; seeds in inflammation of elementary cancer and in haematuria.</td>
</tr>
<tr>
<td>Plumeria rubra L. var. acutiloba (Poir.) Woodson</td>
<td>Veinrai</td>
<td>Apocynaceae</td>
<td>Root bark in herpes and venereal sores.</td>
</tr>
<tr>
<td>Name</td>
<td>Family</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------</td>
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<td>-----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Podocarpus sericifolius D.Don</td>
<td>Podocarpaceae</td>
<td>Bark juice applied externally on centipede bite.</td>
<td></td>
</tr>
<tr>
<td>Pogonatherum eximium (Truth.) Kunth</td>
<td>Poaceae</td>
<td>Place web for skin diseases.</td>
<td></td>
</tr>
<tr>
<td>Pogostemon auriculatus (L.) Hask.</td>
<td>Lamiaceae</td>
<td>Decoction of plants applied externally for rheumatism.</td>
<td></td>
</tr>
<tr>
<td>Pogostemon pubescens Beeth.</td>
<td>Lamiaceae</td>
<td>Roots in snake bite, scorpion sting and haemorrhage, tumors and leaves in wounds.</td>
<td></td>
</tr>
<tr>
<td>Poliostegia suaveolens (Blume) Merr.</td>
<td>Moraceae</td>
<td>Watery sap of stem in eye problem, roots for poulticing stings.</td>
<td></td>
</tr>
<tr>
<td>Polyalxia longifolia Beeth. &amp; Hook. f.</td>
<td>Amaranthaceae</td>
<td>Bark used as febrifuge.</td>
<td></td>
</tr>
<tr>
<td>Polygalites sumarianum (Hook. f. &amp; Thomson)</td>
<td>Amaranthaceae</td>
<td>Bark for scorpion sting.</td>
<td></td>
</tr>
<tr>
<td>Polygala arillata Buch. Harv. ex D. Don</td>
<td>Polygalaceae</td>
<td>Roots for headache, as purgative and febrifuge</td>
<td></td>
</tr>
<tr>
<td>Polygonum barbatum L.</td>
<td>Polygonaceae</td>
<td>Seeds for colic.</td>
<td></td>
</tr>
<tr>
<td>Polygonum chinense L.</td>
<td>Polygonaceae</td>
<td>Plants juice as tonic.</td>
<td></td>
</tr>
<tr>
<td>Polygonum glabrum Willd.</td>
<td>Polygonaceae</td>
<td>Plant as febrifuge, leaves in colic pains.</td>
<td></td>
</tr>
<tr>
<td>Polygonum nepalense Miquel.</td>
<td>Polygonaceae</td>
<td>Leaves applied externally on swellings.</td>
<td></td>
</tr>
<tr>
<td>Potentilla atrata (Irving ex Kutch.</td>
<td>Rosaceae</td>
<td>Roots for gum and teeth, also in diarrhoea.</td>
<td></td>
</tr>
<tr>
<td>Name</td>
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</tr>
<tr>
<td>Potentilla sandatica (Blume) O. Kuntze</td>
<td>–</td>
<td>Rosaceae</td>
<td>Plants as astringent; roots and stem as tonic, in snake and centipede bite.</td>
</tr>
<tr>
<td>Pothen scandens L.</td>
<td>–</td>
<td>Araceae</td>
<td>Seems in snake bite and small pox; also good for asthma.</td>
</tr>
<tr>
<td>Vranus cerasoides Linn</td>
<td>Thizawng</td>
<td>Kosaceae</td>
<td>Barks in fever and malaria.</td>
</tr>
<tr>
<td>Prellium guajava L.</td>
<td>Kwothei, Kasram</td>
<td>Myrtaeae</td>
<td>Bark of root as astringent and in diarrhea; leaves as astringent, arresting vomiting and diarrhea; fruit in sieves, also edible</td>
</tr>
<tr>
<td>Pteridium aquilinum (L.) Kuhn.</td>
<td>Katchat</td>
<td>Polypodiaceae</td>
<td>Rhizome and fruits in chronic visceral and spleen problems.</td>
</tr>
<tr>
<td>Pebris ensiformis Dami f.</td>
<td>–</td>
<td>Polypodiaceae</td>
<td>Rhizome in neck problems; leaves as an astringent and in dysentery.</td>
</tr>
<tr>
<td>Pervanperm aconitum (L.) Wild</td>
<td>Sisilting</td>
<td>Sterealcale</td>
<td>Bark, flowers applied externally with orange for small pox; flowers as tonic, blood purifier, in ulcers, tumors, leprosy, inflammation, etc.</td>
</tr>
<tr>
<td>Pueraria lobata (Wild.) Ohwi</td>
<td>Hepui</td>
<td>Papaceae</td>
<td>Roots poisonous; seeds as febrifuge, antispasmodic and in wormachacle.</td>
</tr>
<tr>
<td>Punica granatum L.</td>
<td>Theibubhai</td>
<td>Puniceae</td>
<td>Root bark and stems as astringent, is tapeworm; fruits and kind of fruits used in diarrhea.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
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</tr>
<tr>
<td>Quassia lanceolataefolia A. Cunn</td>
<td>Thun. Phil</td>
<td>Paeoniaceae</td>
<td>Acne in gums, diarrhea, asthma, indigestion and as diuretic.</td>
</tr>
<tr>
<td>Ranunculus cantoniensis DC.</td>
<td>Hat</td>
<td>Ranunculaceae</td>
<td>Plants used to rise blisters.</td>
</tr>
<tr>
<td>Raphanus sativus L.</td>
<td>Buhali</td>
<td>Brassicaceae</td>
<td>Roots in piles, urinary complaints; leaves as diuretic and laxative; seeds as expeptant, diuretic and astringent.</td>
</tr>
<tr>
<td>Rasovijia serpentina (L.) Benth. et Kurz</td>
<td></td>
<td>Apocynaceae</td>
<td>Roots given in insanity, epilepsy, blood pressure, schizophrenia, psychoses, etc.</td>
</tr>
<tr>
<td>Khophodophora honleri Schott</td>
<td>Thalawaan</td>
<td>Araceae</td>
<td>Mixture of crushed seed juice and fatty oil of Buceros bicornis given to pregnant woman for smooth delivery.</td>
</tr>
<tr>
<td>Rhus cinerea Miller</td>
<td>Khorumna</td>
<td>Anacardiaceae</td>
<td>Fruits edible, also used in colic and dysentery; leaves in fodder.</td>
</tr>
<tr>
<td>Rhus succedanea L.</td>
<td>Chimouk</td>
<td>Anacardiaceae</td>
<td>Leaves used as lodger, also given in blister; fruits in treatment of phthisis.</td>
</tr>
<tr>
<td>Ricinus communis L.</td>
<td>Mutth</td>
<td>Euphorbiaceae</td>
<td>Leaves applied externally for headache and boils; seed oil as purgative.</td>
</tr>
<tr>
<td>Name</td>
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</tr>
<tr>
<td><em>Rorippa dubia</em> (Pers.) Hara</td>
<td>–</td>
<td>Brassicaceae</td>
<td>Plants as diuretic, stimulant and antiscorbutic; seeds as laxative and in asthma.</td>
</tr>
<tr>
<td><em>Rubus acerfolius</em> Pursh</td>
<td>–</td>
<td>Rosaceae</td>
<td>Leaves as astringent; fruits for nocturnal miscarriage (amnestry) of children.</td>
</tr>
<tr>
<td><em>Rubus ellipticus</em> Sm.</td>
<td>Hirutau</td>
<td>Rosaceae</td>
<td>Roots in dysentery and diarrhoea.</td>
</tr>
<tr>
<td><em>Rumia pentifolia</em> (L.) Nees.</td>
<td>–</td>
<td>Asteraceae</td>
<td>Roots as febrifuge, leaves in scabies, leaf juice given in small pox.</td>
</tr>
<tr>
<td><em>Saracenia officinarum</em> L.</td>
<td>Fu</td>
<td>Plantaginaceae</td>
<td>Stem juice in jaundice.</td>
</tr>
<tr>
<td><em>Salix tetrasperma</em> Roxb.</td>
<td>Tuipisuthlab</td>
<td>Salicaceae</td>
<td>Bark as febrifuge.</td>
</tr>
<tr>
<td><em>Salomonia cantoniensis</em> Lear.</td>
<td>–</td>
<td>Polygalaceae</td>
<td>Plants in mouth ulcer.</td>
</tr>
<tr>
<td><em>Sapindus mukorossi</em> Gren.</td>
<td>Hlingsi</td>
<td>Sapindaceae</td>
<td>Fruits as expectorant, fish poison; also as substitute for soap.</td>
</tr>
<tr>
<td><em>Sapium insigne</em> (Royle) Benth. et Hook. f.</td>
<td>Thimvawipui</td>
<td>Euphorbiaceae</td>
<td>Milky latex in acidity, as vesicant.</td>
</tr>
<tr>
<td><em>Saraca asoca</em> (Roxb.) De Wilde</td>
<td>Musthawilh</td>
<td>Euphorbiaceae</td>
<td>Bark as astringent, in urinary infection, gener and scorpion stings.</td>
</tr>
<tr>
<td><em>Soratamia valigna</em> (D.Don.) Muel.-Arg.</td>
<td>–</td>
<td>Bixaceae</td>
<td>Plant as febrifuge and in rheumatism.</td>
</tr>
<tr>
<td><em>Saurasia napaulensis</em> DC.</td>
<td>–</td>
<td>Acanthaceae</td>
<td>Bark as anesthetic and antiseptic.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
</tr>
<tr>
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</tr>
<tr>
<td><em>Schefflera tourane</em> (Wight &amp; Arn.) Haast</td>
<td>Kellubli</td>
<td>Annonaceae</td>
<td>Fruit juice is applied on spots.</td>
</tr>
<tr>
<td><em>Solania weddlei</em> (DC.) Rothb.</td>
<td>Khieang</td>
<td>Theaceae</td>
<td>Bark irritates skin and is anthelmintic and abortifacient.</td>
</tr>
<tr>
<td><em>Solanum capsicum</em> (Munro) L. Majomevar</td>
<td>Rauangal</td>
<td>Poaceae</td>
<td>Leaves in stomachic.</td>
</tr>
</tbody>
</table>
| *Securinega virosa* (Roxb. ex Willd.) Bull.     | Saihak     | Euphorbiaceae| Leaves boiled with water and used for bathing children suffering from 
<p>|                                                  |            |              | measles; leaf juice with tamarind leaves used as vermifuge.            |
| <em>Sesamum orientale</em> L.                          | Chhawchehi | Pedaliaceae  | Seed oil applied externally on warts.                                |
| <em>Smilax glabra</em> Roxb.                           | Thangyai   | Smilacaceae  | Decoction of rhizome is taken for gynaecological problems.            |
| <em>Smilax microlepida</em> Roxb.                      | Kaite      | Smilacaceae  | Roots for inflammation.                                              |
| <em>Smilax ovata</em> Roth.                            | Kaliapui   | Smilacaceae  | Root decoction for jaundice; roots ground with those of <em>Tridax bennettii</em> and paste applied for rheumatic pain and gonorrhea. |
| <em>Smilax perfoliata</em> Laur.                       | –          | Smilacaceae  | Roots with milk or old molasses to blood dysentery.                   |
| <em>Smilax zeplanea</em> L.                            | –          | Smilacaceae  | Roots in dysentery and venereal diseases.                             |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Local name</th>
<th>Family</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solanum angulivo Lmk.</td>
<td>Sambhak</td>
<td>Solanaceae</td>
<td>Roots in toothache and in fever; leaves vomiting; fruits with sugar applied externally for rheums.</td>
</tr>
<tr>
<td>Solanum melongena L.</td>
<td>Barvhauna</td>
<td>Solanaceae</td>
<td>Leaves as narcotic; seeds as stimulant.</td>
</tr>
<tr>
<td>Solanum myriacanthum Dun.</td>
<td>Rulpuk</td>
<td>Solanaceae</td>
<td>The burning smoke of berries in tooth problems.</td>
</tr>
<tr>
<td>Solanum torvum Swartz</td>
<td>Tawkpui</td>
<td>Solanaceae</td>
<td>Fruits in spleen problem.</td>
</tr>
<tr>
<td>Solanum tuberosum L.</td>
<td>Alu</td>
<td>Solanaceae</td>
<td>Paste of tuber is bums.</td>
</tr>
<tr>
<td>Solanum wianum Dunal</td>
<td>Athio</td>
<td>Solanaceae</td>
<td>Smoke of burnt fruits and seeds packed through pipe to expel tooth worms.</td>
</tr>
<tr>
<td>Sonchus wightianus DC.</td>
<td>–</td>
<td>Asteraceae</td>
<td>Roots given in jaundice.</td>
</tr>
<tr>
<td>Spilanthes calva DC.</td>
<td>–</td>
<td>Asteraceae</td>
<td>Inflorescence in ulcers of tongue.</td>
</tr>
<tr>
<td>Spinacia oleracea L.</td>
<td>Tawanam</td>
<td>Chenopodiaceae</td>
<td>Young shoots given in urinary problem; leaves given in inflammation of lungs and bowels.</td>
</tr>
<tr>
<td>Sporadis pinata (L.f) Kurz</td>
<td>Tawhaw</td>
<td>Anacardiaceae</td>
<td>Bark in dysentery and rheumatism; leaves in eczis; fruits in dyspepsia</td>
</tr>
<tr>
<td>Sterculia urens Roxb</td>
<td>Pangkha</td>
<td>Sterculiaceae</td>
<td>Cuts in throat problems.</td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
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</tr>
<tr>
<td>Sterculia villosa Roxb.</td>
<td>Khaupi</td>
<td>Sterculiaceae</td>
<td>Bark in dysentery and diarrhea.</td>
</tr>
<tr>
<td>Stereospermum chebromoides (L.) DC.</td>
<td>Zinghal</td>
<td>Bignoniaceae</td>
<td>Decoction of leaves is used as febrifuge and applied on ulcers.</td>
</tr>
<tr>
<td>Stereospermum fenbriatum (Wallich) DC.</td>
<td>Zhaw.</td>
<td>Bignoniaceae</td>
<td>Decoction of young shoots for stomatitis.</td>
</tr>
<tr>
<td>Stereospermum neumuthum Kure</td>
<td>Zihad</td>
<td>Bignoniaceae</td>
<td>Wood vinegar in chronic ulcers, nose and skin diseases.</td>
</tr>
<tr>
<td>Stereospermum colai (Dillw.) Mahleriy</td>
<td></td>
<td>Bignoniaceae</td>
<td>Leaves and flowers as febrifuge; fruits for scorpion sting.</td>
</tr>
<tr>
<td>Strobilanthes auriculata Nees</td>
<td>Narmang</td>
<td>Asclepiadaceae</td>
<td>Pounded leaves rubbed on the body during temperature fall of intermittent fever.</td>
</tr>
<tr>
<td>Synax serrulataum Roxb.</td>
<td>—</td>
<td>Styracaceae</td>
<td>Resin used externally as antiseptic.</td>
</tr>
<tr>
<td>Swertia angustifolia Buch.-Ham. ex D.Don var. palmella Barkill</td>
<td>—</td>
<td>Gentianaceae</td>
<td>Plants as tonic and antiperiodic.</td>
</tr>
<tr>
<td>Swertia paniculata Wallisch</td>
<td>—</td>
<td>Gentianaceae</td>
<td>Plants as tonic and laxative.</td>
</tr>
<tr>
<td>Symphoricarpos paniculata (Thunb.) Miq.</td>
<td>—</td>
<td>Symplocaceae</td>
<td>Bark used in ophthalmia.</td>
</tr>
<tr>
<td>Symphoricarpos racemosus Roxb.</td>
<td>—</td>
<td>Symplocaceae</td>
<td>Bark in gum problems and in eye diseases.</td>
</tr>
<tr>
<td>Name</td>
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</tr>
<tr>
<td>Symposia cappa (Buch.-Ham. ex D. Don)</td>
<td>–</td>
<td>Asteraceae</td>
<td>Leaves applied to boils as emollient and moisturizer.</td>
</tr>
<tr>
<td>Syzygium cumini (L.) Skeels</td>
<td>Hmaipui</td>
<td>Myrtaceae</td>
<td>Fruit pulp in stomachic and as diuretic.</td>
</tr>
<tr>
<td>Tabernaemontana divaricata (L.) R. Br.</td>
<td>Parksi</td>
<td>Apocynaceae</td>
<td>Roots chewed for toothache; milky latex for eye trouble.</td>
</tr>
<tr>
<td>Tugares erecta L.</td>
<td>Deolhan</td>
<td>Asteraceae</td>
<td>Leaves given in cark, boils and carbuncles; flowers used in eye problems, bleeding of piles and as blood purifiers.</td>
</tr>
<tr>
<td>Tamarindus indica L.</td>
<td>Teng-te-ee</td>
<td>Caesalpinioideae</td>
<td>Fruits digestive, laxative, refrigerant and carminative; only below applied externally in snake bite.</td>
</tr>
<tr>
<td>Turrena odorata (Roxb.) Robins</td>
<td>Khabargong</td>
<td>Rubiaceae</td>
<td>Root paste consumed with water for snake bite.</td>
</tr>
<tr>
<td>Tulas wallchiana (L.) Zucc.</td>
<td>–</td>
<td>Tannaceae</td>
<td>Plants used as fish poison; leaves in asthma, bronchitis, indigestion and epilepsy; leaves and fruits sedative and anti spasmodic.</td>
</tr>
<tr>
<td>Tectona grandis L.f.</td>
<td>Teak, Towr</td>
<td>Verbenaceae</td>
<td>Bark as astringent; wood paste applied externally for swelling; taken orally in dyspepsia; flowers as diuretic; oil from nuts promotes hair growth.</td>
</tr>
<tr>
<td>Name</td>
<td>Local Name</td>
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</tr>
<tr>
<td>Terminalia arjuna (Roxb.) Wight &amp; Am.</td>
<td>Ular-buang</td>
<td>Combretaceae</td>
<td>decoction to bath for dressing ulcers; real juice on раннее</td>
</tr>
<tr>
<td>Terminalia bellirica (Gaertn.) Roxb.</td>
<td>—</td>
<td>Combretaceae</td>
<td>tonic in diarrhea. depresses, laxative and hemorrhoidal</td>
</tr>
<tr>
<td>Terminalia chebula Retz.</td>
<td>Resaw</td>
<td>Combretaceae</td>
<td>bath as diuretic; leaves for skin diseases and in legency</td>
</tr>
<tr>
<td>Terminalia belerica (Linn. ex. Meisn.)</td>
<td>Resaw</td>
<td>Combretaceae</td>
<td>fruits used as laxative.</td>
</tr>
<tr>
<td>Terminalia myricarpa (Hook. et Planch.)</td>
<td>Chir</td>
<td>Combretaceae</td>
<td>bath as an emollient and diuretic.</td>
</tr>
<tr>
<td>Terminalia curcas (Linn.) Heer.</td>
<td>-</td>
<td>Viscaceae</td>
<td>leaves applied externally to boils.</td>
</tr>
<tr>
<td>Tetrastigma leucostaphylum (Donr.) Aiton ex Mabberley</td>
<td>-</td>
<td>Vitaceae</td>
<td>leaves and fruit in gummata and syphilis; pounded leaves applied externally in boils</td>
</tr>
<tr>
<td>Thevetia limon (Cav.) Pelt &amp; Gilow</td>
<td>-</td>
<td>Malvaceae</td>
<td>leaf juice taken orally for stomach problems; leaves applied externally on boils</td>
</tr>
<tr>
<td>TREMIDEGA grandiflora (Roth ex. Roth)</td>
<td>Zawngfian</td>
<td>Acanthaceae</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yaha</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Local name</td>
<td>Family</td>
<td>Uses</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>------------</td>
<td>------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Tinospora condylodes (Wallich) Miurs ex Hook. f. &amp; Thomson</td>
<td>Théiauwaitung</td>
<td>Menispermaceae</td>
<td>Juice of fresh plants in gonorrhoea used as diuretic.</td>
</tr>
<tr>
<td>Toddalia asiatica (L.) Lam.</td>
<td>–</td>
<td>Rutaceae</td>
<td>Plants as febrifuge and bark as tonic.</td>
</tr>
<tr>
<td>Panaeolia cineata M. Roem.</td>
<td>Bei</td>
<td>Meliaceae</td>
<td>Bark as astringent, tonic, anti-periodic, dysenteric and applied externally on ulcers.</td>
</tr>
<tr>
<td>Trenoc orientalis (L.) Rame</td>
<td>Rohpuarre</td>
<td>Thymaceae</td>
<td>Plant juice in epilepsy</td>
</tr>
<tr>
<td>Trevesia palmata (Roeb.) Vrs.</td>
<td>Kurwitkeli</td>
<td>Araliaceae</td>
<td>Juice of leaf stalks taken for colic, high blood pressure and stomach ache.</td>
</tr>
<tr>
<td>Trichosanthes anguina L.</td>
<td>Beni</td>
<td>Cucurbitaceae</td>
<td>Fruit as purgative, emetic and anthelmintic.</td>
</tr>
<tr>
<td>Uncaria tesseliferus Roxb.</td>
<td>Ralsamakni</td>
<td>Rubiaceae</td>
<td>Boiled leaves and young shoots for throat problems.</td>
</tr>
<tr>
<td>Uropha crinita (L.; Dew. ex DC.</td>
<td>–</td>
<td>Fabaceae</td>
<td>Plants antidote to snake bite; fruit juice as mouth wash for children.</td>
</tr>
<tr>
<td>Urena lehula L.</td>
<td>Leitha</td>
<td>Malvaeae</td>
<td>Roots applied externally for rheumatism, also as diuretic.</td>
</tr>
<tr>
<td>Verbena officinalis L.</td>
<td>–</td>
<td>Verbenaceae</td>
<td>Roots in snake bites; plants used in nervous problems. Leaves used as tonic and febrifuge.</td>
</tr>
<tr>
<td>Vernonia squarrosa (D.Doo) Lass.</td>
<td>–</td>
<td>Asteraceae</td>
<td>Plants in wounds, ulcers; for dye in mustard and dropy.</td>
</tr>
<tr>
<td>Name</td>
<td>Localname</td>
<td>Family</td>
<td>Uses</td>
</tr>
<tr>
<td>-----------------------------</td>
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<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Viola philoxer Blume</td>
<td>–</td>
<td>Violaceae</td>
<td>Flowers in lung problems.</td>
</tr>
<tr>
<td>Viscum articulatum Burn. f.</td>
<td>Lusgar</td>
<td>Lamiaceae</td>
<td>Plants for fever</td>
</tr>
<tr>
<td>Viscum peruvianum Wallr. ex Schauer</td>
<td>Thingkhatwin</td>
<td>Verbenaceae</td>
<td>Stem horc heated in water and used for patients suffering from malarial fever and black fever.</td>
</tr>
<tr>
<td>Wrightia arborescens (Donnatt.) Mabberlay</td>
<td>–</td>
<td>Apocynaceae</td>
<td>Bark in menstural and urdinal complaint.</td>
</tr>
<tr>
<td>Xyloia xylocarpa (Roth.) Turi.</td>
<td>Thing-uk.</td>
<td>Moraceae</td>
<td>Bark in leprosy, gonorrhea, worms, diarrhea and vomiting; oil seeds in piles and leprosy.</td>
</tr>
<tr>
<td>Zanthoxylum armatum DC.</td>
<td>Arkiroch</td>
<td>Rutaceae</td>
<td>Thorns, young stems and fruits as fish poison, in stomatologic and urologic problems, seeds and bark in fever, cholera and dyspepsia.</td>
</tr>
<tr>
<td>Zanthoxylum rhutsa (Roth.) DC.</td>
<td>Chingit</td>
<td>Rutaceae</td>
<td>Leaves as vegetable; berries as fish poison.</td>
</tr>
<tr>
<td>Lee mays L.</td>
<td>Vahuan</td>
<td>Lamiaceae</td>
<td>Green nettle use as astringent.</td>
</tr>
<tr>
<td>Zingiber officinale Rosc.</td>
<td>Sambthing</td>
<td>Zingiberaceae</td>
<td>Rhizomes as stimulant; emmenagogue, dyspepsia and also as a flavouring agent.</td>
</tr>
<tr>
<td>Zingiber purpureum Rosc.</td>
<td>Rawshing</td>
<td>Zingiberaceae</td>
<td>Rhizomes as stimulant, tonic, in dyspepsia and also is a flavouring agent.</td>
</tr>
<tr>
<td>Azephas mauretiana Lam.</td>
<td>Kawrsinho</td>
<td>Khamaceae</td>
<td>Leecfinition of roots for fever and powdered roots applied on ulcers.</td>
</tr>
</tbody>
</table>
The other major cause responsible for forest degradation was the large scale encroachment on the forest land by the local people on account of not having proper demarcation on the ground. In the absence of proper records and boundary demarcations, land settlement permits are issued by the revenue department even in reserve forest areas, causing great difficulty and confusion for the effective management of forests by the forest authorities. According to a notification way back in 1956, the land within 0.8 km on either side of 16 major rivers and on Silchar-Aizawl national highway continued to remain as reserve forest on record. Whereas, the situation on ground is different. All along Silchar-Aizawl road, people have constructed permanent settlements and encroached large areas for their personal use. During insurgency period many villages were relocated along the roads and valleys within the reserve forests and people have settled permanently.

Conservation of plant diversity is one of the prime objectives of today’s needs as the forests are disappearing. In this direction the governmental and non-governmental organisations are continuously contributing their efforts. Although in terms of geographical area, the Mizoram has second highest forest cover in the country, but virgin forests are depleted and replaced by secondary and bamboo forests. As a result, many orchids, ornamentals and medicinal species have become threatened in nature and need protection. Mizoram has enacted many acts to safeguard the forests, their produce and the land which harbour them. There are village safety reserves, village supply reserves and protected reserves in Mizoram. The Pawi Autonomous District Council (Forest) Act, 1976; Lakher Autonomous District Council (Forest) Act, 1981, and Mizoram District Council (Forest) Act, 1955, have ample powers to regulate the cutting of forests or any kind of activity in the forest areas in their jurisdiction. As the name indicates, the Village Safety Reserves have been constituted near villages for the protection of forests, for sustaining healthy environment, abundant water supply and protection against fire. The village supply reserves have been constituted to cater to the needs of village community. Under protected reserves the valuable forests are not allowed to be cut for the interest of village communities. For further protection of forests, the entire land within 0.8 km on either side of the sixteen major rivers (Tlawneg or Dhaleswari, Tut or Gutur, Teirei or Pakna, Langkai, Chemhue, Sei, Tuivai, Tuivawl, Tuirini, Tuirial or Sonai, Tuiruang or Barak, Khawthlang tuipui, Tuchiawng, Kau, De and Phairuang) of the state and on Silchar-Aizawl road via Sairang has been constituted as Reserve forests.
in 1956 as per provisions of Mizo District (Forest) Act, 1955. The riverine reserve forests cover an area of ca 4455 sq. km and roadside reserves cover ca 418 sq. km.

*In situ* conservation is the best and most effective means to conserve species diversity in its natural habitats. The Government of Mizoram has already put in place protected area network, comprising two National Parks and four Wildlife Sanctuaries. Murlain National park with an area of ca 200 sq. km and Blue Mountain National park with an area of ca 50 sq. km were created in 1991 and 1997 respectively. Dampa Wildlife Sanctuary, now a Tiger reserve, covers an area of 500 sq. km and was constituted in 1985. Similarly Ngengpui Wildlife Sanctuary with an area of 170 sq. km, Khawnglum Wildlife Sanctuary with 41 sq. km and Lengteng with 120 sq. km area are also serving the cause of conservation. The management of these parks and sanctuaries needs to be strengthened for proper and effective conservation of both flora and fauna.

Orchid sanctuaries at Sairep, near Lungleh, and Ngopa, near Champhai have been set up by the state forest department to save orchids. Similarly more sanctuaries in the orchid rich habitats in different eco-climatic zones, like Blue mountain, Marrub, North Vaijarphai, Sarthah would be desirable for preserving orchids. A gene sanctuary for rare and endemic plant *Mantisia mengleri* (‘dancing girl’) can also be set up near Darzo or Blue Mountain area.

Rare and threatened taxa can also be cultivated and multiplied in Botanic Gardens. Some such Botanic gardens need to be established in Aizawl, Lungleh and Sangai areas. *Ex situ* conservation can also be carried out by using tissue culture techniques. Infrastructural facilities for this can be created in research wing of state forest department. Thus, *in vitro* raised seedlings could, in future, be made available both for rehabilitation in the wild and for commercial purposes to check the depletion of wild populations. Jhum cultivation need to be tackled effectively and cleverly since jhuming is an integral part of the culture of Mizos. Public awareness is required to be created. Agroforestry system with new technologies should be introduced as an alternative means of jhuming system. All departments concerned with the development have to evolve policies which are beneficial and suitable in local conditions. All forest areas need to be demarcated on ground and boundary disputes settled amicably to check further encroachment on forest land by the local
inhabitants. Proper bamboo felling rules and extraction of other non-wood forest products regulations require to be introduced. Bamboo-based industries can be established to improve the living standards of the local people. Plantations of cash crops, like banana, pineapple, oranges, papaya etc., need to be encouraged among jhumias. Finally, proper planning and judicious use of plant resources will naturally ensure the conservation of flora for future generations.

Materials and presentation of flora

The present floristic study is based mainly on the collections made by two of us (K.P.S & D.K.S) from different localities in the state during 1988-95, as also the collections made by earlier collectors and the species mentioned in literature.

All the specimens, collected by different scientists of the Regional circle of the Botanical Survey of India, Shillong are lodged in the Kanjilal Herbarium, of the Circle (ASSAM) and a duplicate set at Central National Herbarium of the Botanical Survey of India, Howrah (CAL). Collections of A.T. Gage, J.E. Leslie, Mrs. N.E. Parry and father Godfrey, deposited at CAL, have also been studied.

It is proposed to bring out flora of the state in three volumes dealing with flowering plants. Volume 1 includes Introductory chapter, like introduction, physiography, geology, drainage, forest types, economic plants, botanical studies, references; key to families; enumeration of 884 taxa under 403 genera distributed in 90 families of Angiosperms from Ranunculaceae to Asteraceae. The families are arranged according to the Bentham and Hooker's system of classification (1862-83) with little modifications as proposed by Hutchinson (1959) regarding splitting of the families. Within each family, genera and within the genus species are arranged alphabetically. The name of the species is followed by up to date nomenclature, in accordance with the International Code of Botanical Nomenclature (ICBN):

Dichotomous keys for identification of indigenous taxa from the rank of family to infraspecific level are given. The flora generally includes correct botanical name, basionym, if any and a very few selected synonyms, with original references and references to the Flora of British India by Sir J.D. Hooker (1872 - 1897), Flora of Assam by Kanjilal et al.
(1934 - 39), and Flora of Lushai hills by C.E.C. Fischer (1938). Wherever the species is not included in these floras, other recent literature have been cited. Local names, wherever available, have been provided in italicized form after citations, followed by language code within the bracket.

Brief descriptions of the species or the infraspecific taxa based on observations made on Mizoram specimens are provided. Whenever specimens are not available but reported from the area by earlier workers, the descriptions have been borrowed from the literature. Phenological data have been recorded from the field observations made by the authors as well as from the herbarium sheets examined during the study. At places ecological data, like relative abundance, habitat, etc., are also provided after phenological data. The specimens examined have also been cited. Unless otherwise mentioned, all the specimens examined are deposited in the Herbarium of Botanical Survey of India, Eastern Circle, Shillong (ASSAM). Specimens cited by earlier workers, but not seen by the authors are also cited quoting the source in bracket against specimen number. Few species are also reported just by their names in the literature. Their identity could not be ascertained. These species are just enumerated at the end of family wherever applicable for future reference. A general index to the botanical and local names has also been provided at the end.
REFERENCES


KEY TO THE FAMILIES

(K.P. Singh)

1a. Vascular bundles open in stem, arranged in concentric rings; leaves usually reticulately veined; flowers 4 or 5-merous; seeds with 2 cotyledons:

2a. Plants insectivorous:

3a. Leaves flat, sticky with gland tipped hairs at margins; petals free, not spurred
   ... DROSERAECAE

3b. Leaves modified into sub ovate bladders with sensitive trap doors; petals united and spurred at base
   ... LENTIBULARIACEAE

2b. Plants not insectivorous:

4a. Plants parasitic or saprophytic

5a. Plants without leaves:

6a. Climbers, parasitic on aerial parts of host plants
   ... CUSCUTACEAE

6b. Herbs, parasitic on roots of the host plants:

7a. Flowers unisexual, in spadices; ovules 1 - 13; fruit a nut
   ... BALANOPHORACEAE

7b. Flowers bisexual, solitary or in racemes; ovules many; fruit a capsule:

8a. Flowers irregular; ovary 1-celled
   ... OROBANCHACEAE

8b. Flowers regular; ovary 1-6-celled
   ... MONOTROPACEAE

5b. Plants with leaves:

9a. Flowers often brightly coloured; petals present
   ... LORANTHACEAE

9b. Flowers often greenish; petals absent
   ... SANTALACEAE

4b. Plants neither parasitic nor saprophytic :

10a. Fruit a legume:

11a. Corolla actinomorphic; sepals and petals valvate; stamens 4- many
   ... MIMOSACEAE
11b. Corolla zygomorphic; sepals and petals imbricate; stamens mostly 10:

12a. Calyx united; corolla papilionaceous, posterior petal outermost; stamens mono or didelphous ... FABACEAE

12b. Calyx mostly free; corolla caesalpinaceous, posterior petal innermost; stamens free ... CAESALPINIACEAE

10b. Fruit otherwise, not a legume:

13a. Perianth present, biseriate or multiseriate:

14a. Corolla polyandrous or at least some of the petals free:

15a. Stamens many or more than twice as many as petals:

16a. Ovary superior or half superior

17a. Pistils free, usually more than one:

18a. Stamens perigynous arising from hypanthium ... ROSACEAE

18b. Stamens hypogynous arising from receptacle.

19a. Perianth 3- more seriate, 3-4-merous:

20a. Sepals and petals valvate; fruits fleshy ... ANNONACEAE

20b. Sepals and petals imbricate; fruit dry:

21a. Erect trees or shrubs; stipules caducous ... MAGNOLIACEAE

21b. Woody climbing shrubs; stipules absent ... SCHISANDRACEAE

19b. Perianth 2-seriate, 5-merous:

22a. Trees; leaves with prominent lateral nerves; sepals persistent ... DILLENIACEAE
22b. Herbs, undershrubs or shrubs;
leaves without prominent lateral nerves;
scales usually deciduous:

23a. Leaves radical and alternate;
petals with nectariferous gland
... RANUNCULACEAE

23b. Leaves alternate or opposite;
petals without nectariferous gland
... HYDRANGEACEAE

17b. Pistil one, united

24a. Stamens perigynous, arising from hypogynium:

25a. Leaves alternate, stipulate;
fruit usually a drupe
... ROSACEAE

25b. Leaves opposite, extipulate;
fruit a capsule:

26a. Carpels 4 - 20
... SONNERATIACEAE

26b. Carpels 2 - 3
... LYTHRACEAE

24b. Stamens hypogynous:

27a. Stamens monadelphous or polyadelphous:

28a. Leaves opposite, pellucid
... HYPERICACEAE

28b. Leaves alternate, not pellucid:

29a. Anthers 2 - celled
... STERCULIACEAE

29b. Anthers 1 - celled:

30a. Trees; leaves digitately compound;
carpels 7 - 5
... ROMAGNACEAE

30b. Plants not as above; carpels many
... MALVACEAE

27b. Stamens free:

31a. Ovary long stipitate on a gynophore
... CAPPARACEAE

31b. Ovary sessile, not stipitate:

32a. Flowers unisexual:

33a. Ovary 3-carpelled;
ovules 1-2 in each cell
... EUPHORBIACEAE

33b. Ovary not 3-carpelled;
ovules 1-many in each cell:
34a. Plants usually with resinous juice; leaves opposite: ... CLUSIACEAE

34b. Plants without resinous juice; leaves alternate: ... THEACEAE

32b. Flowers bisexual:

35a. Fruits long beaked: ... GERANIACEAE

35b. Fruits not long beaked:

36a. Leaves opposite:

37a. Herbs; leaves gland dotted; flowers 5-merous; seeds not arillate: ... HYPERICACEAE

37b. Trees; leaves not gland dotted; flowers 4-merous; seeds arillate: ... CLUSIACEAE

36b. Leaves alternate:

38a. Venation palmate:

39a. Flowers axillary; placentation axile: ... TILIACEAE

39b. Flowers terminal; placentation parietal: ... BIXACEAE

38b. Venation pinnate:

40a. Anthers dehiscence poricidal: ... ELAEOCARPACEAE

40b. Anthers dehiscence otherwise:

41a. Plants succulent; placentation free central: ... PORTULACACEAE

41b. Plants not succulent; placentation otherwise:

42a. Sepals 2: ... PAPAVERACEAE

42b. Sepals 4 - 6 (usually 5):

43a. Leaves with pellucid aromatic glands: ... RUTACEAE

43b. Leaves without glands:

44a. Sepals not accrescent: ... BERBERIDACEAE

44b. Sepals accrescent:
45a. Leaves stipulate; ovules few, parietal
        ... DIPTEROCARPACEAE
45b. Leaves exstipulate; ovules many, axile:

46a. Bracteoles often paired below the calyx;
anthers usually opening lengthwise
        ... THEACEAE
46b. Bracteoles if present not as above;
anthers usually opening by apical pore
        ...Actinidiaceae

15b. Stamens fewer, at the most twice
     as many as the petals:

47a. Leaves simple:

48a. Ovary 1-celled:

49a. Climbers or scandent shrubs:

50a. Ovules many
        ... PASSIFLORACEAE
50b. Ovules single:

51a. Flowers unisexual,
     fruits not winged
        ... MENISPERMACEAE
51b. Flowers bisexual,
     fruits broadly winged
        ... CARDIOTTERIDACEAE

49b. Plants otherwise:

52a. Placentaation free-central:

53a. Sepals 2;
capsules circumscissile
        ... PORTULACACEAE
53b. Sepals and capsules otherwise:

54a. Stamens alternate to petals ... CARYOPHYLLACEAE
54b. Stamens opposite to petals:

55a. Herbs; leaves mostly basal
     ... PRIMULACEAE
55b. Shrubs or trees;
     leaves alternate
     ... MYRSINACEAE

52b. Placentaation otherwise:

56a. Ovary stipitate on gynophore
     ... CAPPARACEAE
56b. Ovary sessile or subsessile:
57a. Anther connectives with an appendage at apex

57b. Anther connectives without appendages at apex:

58a. Ovules 1-2, in each cell of ovary, pendulous:

59a. Calyx superior; fruits not drupaceous ... HERNANDIACEAE
59b. Calyx inferior; fruits drupaceous ... IUCINACEAE

58b. Ovules many, in each cell of ovary:

60a. Stamens 5, free; staminodes absent;
    seeds embedded in resinous pulp ... PITOSPORACEAE

60b. Stamens more than 5; filaments often connate
    into separate bundles; staminodes present;
    seeds not embedded in resinous pulp ... FLACOURTIACEAE

48b. Ovary 1-many celled:

61a. Leaves aromatic gland dotted ... RUTACEAE
61b. Leaves not gland dotted:

62a. Corolla cruciform, stamens tetradynamous ... BRASSICACEAE
62b. Corolla and stamens not as above:

63a. Flowers zygomorphic:

64a. Sepals 3 ... BALSAMINACEAE
64b. Sepals 5:

65a. Inner 2 sepals petaloid;
    stamens 8, monadelphous;
    ovary 2-celled ... POLYGALACEAE

65b. Sepals not petaloid;
    stamens 10, free;
    ovary 3-celled ... MALPICIACEAE

63b. Flowers actinomorphic:

66a. Leaves opposite:

67a. Fruits long beaked ... GERANIACEAE
67b. Fruits otherwise:

68a. Herbs ... LYTEACEAE
68b. Trees, shrubs or
    climbing shrubs:
69a. Stamens 2  ... OLHACEAE
69b. Stamens 10  ... MALPIGHIACEAE

66b. Leaves alternate:

71a. Flowers unisexual:

71b. Flowers bisexual or polygamous:

72a. Flowers in umbels or umbelules, ovules 2-many per cell  ... AQUIFORNIACEAE

72b. Flowers not in umbel or umbelules, ovules 1-2 per cell:

73a. Plants twining herbs or shrubs, carpels 3  ... MENISPERMACEAE
73b. Plants herbs, shrubs or trees, carpel 1  ... EUPHORBIACEAE

74a. Plants climbing or creeping with tendrils  ... VITACEAE
74b. Plants of other habits, without tendrils:

75a. Fertile stamens 2 or 3:

76a. Fertile stamens 2; petals 4-5  ... SABIACEAE
76b. Fertile stamens 3; petals 3  ... OLACACEAE

75b. Fertile stamens more than 3:

77a. Fruits long beaked  ... GERANIACEAE
77b. Fruits not long beaked:

78a. Stamens opposite to petals:

79a. Sepals valvate, much reduced or open in bud; anthers versatile; ovary 3-celled  ... RHAMNACEAE

79b. Sepals imbricate, well developed; anthers introrse; ovary 3-6-celled  ... LECYTHEACEAE

78b. Stamens alternate to petals:

80a. Venation usually pinnate; sepals mostly imbricate:
81a. Ovary 1-3-celled; ovules many; 
placentaation axile or parietal:

87a. Petals often clawed; stamens 5 – 10; 
placentaation usually axil ... SAXIFRAGACEAE

82b. Petals not clawed; stamens 5; 
placentaation usually parietal ... ITEACEAE

81b. Ovary 1-5-celled; ovules 2-10; 
placentaation otherwise:

83a. Stamens 4-5, ovules mostly 2 ... CELASTRACEAE

83b. Stamens 3; ovules 2-10 ... HIPPOCRATEACEAE

80b. Venation palmate; sepals valvate:

84a. Stamens united ... STERCULIACEAE

84b. Stamens free or slightly connate at base ... TILIACEAE

47b. Leaves compound:

84a. Carpels free or deeply lobed:

80a. Ovules pendulous, 
  solitary in each cell; styles 2 – 5 ... SIMAROUBACEAE

86b. Ovules ascending, 2 in each cell; style 1 ... CONNARACEAE

84b. Carpels united:

87a. Ovary 1-celled:

88a. Ovules 2 or more in each cell ... MORINGACEAE

88b. Ovule solitary in each cell:

89a. Stamens 10, in 2 whors ... ANACARDIACEAE

89b. Stamens 3-5, in one whorl ... HERNANDIACEAE

87b. Ovary 2 or more-celled:

90a. Leaves aromatic gland dotted ... RUTACEAE

90b. Leaves not aromatic gland dotted:

91a. Herbs or climbers:

92a. Leaves stipulate ... GERANIACEAE

92b. Leaves exstipulate:
93a. Leaves divided or dissected; sepal 2
   ... FUMARIACEAE
93b. Leaves not divided as above; sepal 4-5:

94a. Leaves biternately compound
   ... SAPINDACEAE
94b. Leaves ternately or pinnately compound
   ... OXALIDACEAE

94b. Trees or shrubs (sometimes scandent):

95a. Scandent shrubs with tendrils
   ... VITACEAE
95b. Trees, shrubs or undershrubs without tendrils:

96a. Stamens opposite to petals,
     equal to or fewer than the petals:

97a. Fertile stamens 4 or 5;
     placentation basal
     ... LECYTHIDACEAE
97b. Fertile stamens 2 or 3,
     placentation axil or apical:

98a. Petals valvate; fertile stamens 3;
     ovules 1-5 in each cell
     ... OLACACEAE
98b. Petals imbricate; fertile stamens 2;
     ovules 1-2 in each cell
     ... SABIACEAE

98b. Stamens at least one whorl alternating with petals,
     equal to or up to twice as many as petals:

99a. Leaves gland dotted
     ... RUTACEAE
99b. Leaves not gland dotted:

100a. Flowers regular, at least some unisexual;
      stamens with scales at base
      ... SIMAROUBACEAE
100b. Flowers and stamens otherwise:

101a. Flowers zygomorphic;
      disc extra-staminal:

102a. Leaves opposite;
      digitate; ovules 2
      ... HIPPOCASTANACEAE
102b. Leaves alternate;
      pinnate; ovules 1-2
      ... SAPINDACEAE

101b. Flowers actinomorphic;
      disc intra-staminal:
103a. Leaves stipulate ovary 2-3-celled, fruit capsule
103b. Leaves exstipulate: ovary 2-5 celled; fruit berry or capsule:

104a. Stamens twice as many as petals; filaments free or connate at base
104b. Stamens either less than twice as many as petals or filaments united into a base

105a. Ovary inferior:

105b. Stamens numerous, usually more than twice as many as petals:

106a. Flowers unisexual
106b. Flowers bisexual:

107a. Leaves opposite or fasciculate:

108a. Leaves gland dotted
108b. Leaves not gland dotted

107b. Leaves alternate:

109a. Leaves stipulate
109b. Leaves exstipulate:

110a. Disc present; stamens epipetalous
110b. Disc absent; stamens not epipetalous

108b. Stamens twice as many as petals or fewer:

111a. Plants aquatic; leaves floating; fruits 2-spined
111b. Plants otherwise:

112a. Inflorescence umbellate:

113a. Shrubs or trees; leaves stipulate; fruits baccate or drupaceous
113b. Herbs; leaves exstipulate; fruit a schizocarp

112b. Inflorescence otherwise:
114a. Fruits 4-winged ... COMBRETACEAE
114b. Fruits not winged:

115a. Leaves stipulate:

116a. Leaves alternate; stamens indefinite ... ROSACEAE
116b. Leaves opposite;

stamens twice as many as petals ... RHIZOPHORACEAE

115b. Leaves exstipulate:

117a. Ovules pendulous:

118a. Ovary 2–5-celled; ovules 2–4 ... SYMPOCACEAE
118b. Ovary usually 1–2-celled;

ovules solitary:

119a. Petals imbricate ... NYSSACEAE
119b. Petals mostly valvate or absent:

120a. Flowers cymose;

style simple ... ALANGIACEAE
120b. Flowers cymose to capitate; style simple
or lobed ... CORNACEAE

117b. Ovules on axile, parietal or central placentas:

121a. Leaves basal or opposite,
palmately nerved;
anther opening by pores ... MELASTOMATACEAE
121b. Leaves cauline, alternate,
pinnately nerved;
anthers opening by slits ... ONAGRAEAE

14b. Corolla gamopetalous variously;
usually forming a long or short tube:

129a. Ovary fully or semi inferior:

123a. Plants climbing with tendrils;

stems with bicollateral bundles ... CUCURBITACEAE
123b. Plants of various habits, without tendrils;
stems with collateral vascular bundles:

124a. Ovary 1–celled:
125a. Flowers in heads:

126a. Calyx limb cup shaped, 4-lobed; stamens 4, free ... DIOPSACACEAE
126b. Calyx absent or reduced to pappus; stamens 5; anthers syngeneious ... ASTERACEAE

125b. Flowers not in heads, various:

127a. Leaves pinnately compound ... CAPRIFOLIACEAE
127b. Leaves simple:

128a. Ovules solitary, pendulous ... CAPRIFOLIACEAE
128b. Ovules 5, or more, not pendulous ... MYRSINACEAE

124b. Ovary 2-many-celled:

129a. Leaves opposite; stipules inter or intra-petiolar ... RUBIACEAE
129b. Leaves otherwise, if opposite then stipules not interpetiolar or absent:

130a. Stamens more than twice the number of corolla lobes, epipetalous, ovules pendulous ... SYMPLOCACEAE
130b. Stamens as many as corolla lobes; ovules axile:

131a. Stamens 10:

132a. Ovary falsely 5-10 -celled; fruit a berry ... VACCINIACEAE
132b. Ovary 3-celled; fruit a drupe ... STYRACACEAE

131b. Stamens 5:

133a. Flowers actinomorphic ... CAMPANULACEAE
133b. Flowers zygomorphic ... LOBELIACEAE

122b. Ovary superior:

134a. Plant succulent ... CRASSULACEAE
134b. Plants not succulent

135a. Stamens more than corolla lobes:
136a. Leaves palmately lobed; petioles long, fistular  
136b. Leaves not lobed; petioles neither long nor fistular:

137a. Petals connate at base  
137b. Petals united most of their length:

138a. Flowers unisexual; calyx gamosepalous  
138b. Flowers bisexual; calyx polysepalous:

139a. Plants with yellowish milky juice; ovules solitary in each cell; fruit a berry  
139b. Plants without juice; ovules many in each cell; fruit a capsule

135b. Stamens as many as corolla lobes or fewer:

140a. Stamens opposite to corolla lobes:

141a. Ovary 1-celled; placentation free central:

142a. Shrubs; leaves alternate; perianth gland dotted  
142b. Herbs; leaves basal; perianth not gland dotted

141b. Ovary 2-celled; placentation axile:

143a. Leaves compound; stamens united by filaments  
143b. Leaves simple; stamens free:

144a. Flowers bisexual; stamens epipetalous  
144b. Flowers unisexual; stamens not epipetalous

140b. Stamens alternate to corolla lobes:

145a. Flowers zygomorphic; stamens 3 or 4:

146a. Inflorescence distinctly bracteate:

147a. Leaves often with cystoliths; seeds supported on retinaculum
147b. Leaves without cystoliths; seeds not supported or retinacula. ... THUNBERGIACEAE

146b. Inflorescence otherwise:

148a. Ovules and seeds few:

149a. Ovary 4-lobed; style gynobasic. ... LAMIACEAE
149b. Ovary not lobed; style terminal:

150a. Stems and branches terete; flowers with extrafloral glands at the base of pedicels. ... PEDALIACEAE
150b. Stems and branches 4-angled; flowers without extrafloral glands. ... EBENACEAE

148b. Ovules and seeds numerous:

151a. Leaves compound; seeds winged. ... BIGNONIACEAE
151b. Leaves simple or dissected; seeds not winged:

152a. Placentation axile. ... SCROPHULARIACEAE
152b. Placentation parietal:

153a. Perianth 4-5-merous; corolla contorted. ... GENTIANACEAE
153b. Perianth 5-merous; corolla imbricate or valvate. ... GESNERIACEAE

145b. Flowers actinomorphic; stamens 5:

154a. Leaves alternate:

155a. Aquatic floating plants with floating cordate leaves; seeds prominently tuberous. ... LEMNANTHACEAE
155b. Plants not as above:

156a. Flowers in scorpionid cymes:

157a. Fruits of 4 nutlets; seeds without endosperm. ... BORAGINACEAE
157b. Fruits 1-4-seeded; seeds usually with endosperm. ... HELIOTROPIACEAE
156b. Flowers not in scorpionid cymes:

158a. Calyx with appressed stigmas

158b. Calyx without appendages:

159a. Corolla scarious

159b. Corolla not scarious:

160a. Ovules many in each cell

160b. Ovules 1-2 in each cell:

161a. Sepals free; corolla lobes contorted and infolded

161b. Sepals connate; corolla lobes imbricate; fruits dry, with 4 nutlets

154b. Leaves opposite, verticillate or radical:

162a. Plants scapigerous with pediole

162b. Plants not as above:

163a. Ovary 1-celled

163b. Ovary 2 or more-celled:

164a. Anthers and stigma united to form a gynostegium; pollen in pollen ... ASCLEPIADACEAE

164b. Anthers and stigma not as above; pollen not in pollinia:

165a. Plants with milky sap;

165b. Plants with watery sap;

166a. Hilseps in fruit; fruit of 4 nutlets

166b. Plants otherwise:

167a. Ovules 1-2 in each cell:
168a. Ovule 1 in each cell
168b. Ovules 2 in each cell:

169a. Stamens 2
169b. Stamens 3-5

167b. Ovules many in each cell:

170a. Plants covered with glandular, stellate or lepidote indumentum
170b. Plants not as above:

171a. Stigma trident; ovary 3-celled
171b. Stigma bifid or simple:
    ovary 1-3-celled:

172a. Placentation axile; fruit a berry
172b. Placentation parietal; fruit a septicidal capsule

13b. Perianth absent, if present then unisierate and not differentiated into calyx and corolla:

173a. Perianth absent:

174a. Inflorescence a cyathium; placentation axile
174b. Inflorescence catkin like or a spike; placentation basal or parietal:

175a. Leaves opposite; stamens 1-3, connate; ovules pendulous
175b. Leaves alternate; stamens usually 5-10; ovules not pendulous:

176a. Flowers unisexual; fruit a capsule or drupe:

177a. Ovules many on parietal placenta; fruit a capsule
177b. Ovule solitary on basal placenta; fruit a drupe

176b. Flowers bisexual; fruit a berry or nodule:
178a. Ovule 1; ovary superior; bracts not petaloid ... PIPIRACEAE
178b. Ovules 2 or more; ovary superior or inferior; bracts petaloid ... SAURURACEAE

179b. Perianth present.

179a. Ovary inferior or semi-inferior:

180a. Erect herbs or creepers:

181a. Leaves alternate; flowers universal ... BEGONIACEAE
181b. Leaves opposite; flowers bisexual:

182a. Perianth calycine ... LYTHRACEAE
182b. Perianth corolline ... NYCTAGINACEAE

180b. Plants woody, usually trees or shrubs:

183a. Perianth 2-3-lobed; ovary 6-celled; ovules many ... ARISTOLOCHIACEAE
183b. Perianth 4-5-lobed; ovary 1-celled; ovules 1-3:

184a. Stamens 4 - 5, as many as calyx lobes ... SANILALACEAE
184b. Stamens 8 - 10, twice as many as calyx lobes ... COMBRETACEAE

179b. Ovary superior:

185a. Anthers dehiscing by valves ... LAURACEAE
185b. Anthers dehiscing otherwise:

186a. Bracts much larger than the fruits and adhere to them as wing:

187a. Leaves compound ... JUGLANDACEAE
187b. Leaves simple ... CORYLACEAE

186b. Bracts if present otherwise:

188a. Perianth variously segmented and recurved backwards with free tips ... PROTEACEAE
188b. Perianth otherwise:
189a. Pistil 2 or more, free:
  190a. Trees ........................................... STERCULIACEAE
  190b. Herbs or climbers ............................ RANUNCULACEAE

189b. Pistil 1:
  191a. Ovary 1-celled:
    192a. Stipules ochraceae ........................... POLYGONACEAE
    192b. Stipules if present not ochraceae:
      193a. Annual or perennial herbs:
        194a. Flowers unisexual:
          195a. Leaves exstipulate; ovules 2 ........ MENISPERMACEAE
          195b. Leaves usually stipulate; ovule solitary:
            196a. Leaves palmately 3-11-partite; placentation apical ........ CANNABINACEAE
            196b. Leaves simple; placentation basal ..................... URTICACEAE
        194b. Flowers bisexual:
          197a. Perianth and bracts scarious; stamens connate below ........ AMARANTHACEAE
          197b. Perianth and bracts if present green and herbaceous; stamens free ............................ CHENOPODIACEAE

193b. Shrubs or trees:
  198a. Stipules absent:
    199a. Leaves without pellucid dots or lepidots:
      200a. Perianth lobes valvate or imbricate; calyx minute or absent; fruit drupaceous .......... OPILIACEAE
200b. Perennial lobes imbricate; calyx conspicuous; fruits capsular, indehiscent

...THYMELAEACEAE

199b. Leaves often with pellucid dots or trichomes:

201a. Stamens connate into a column; seeds arillate

...MYRISTICACEAE

201b. Stamens free; seeds not arillate

...ELAEAGNACEAE

198b. Stipules present:

202a. Style branched:

203a. Anthers intexted and reversed in bud; ovule 1, apical

...MORACEAE

203b. Anthers erect in bud; ovules 1-2, apical or basal:

204a. Ovule 1, apical

...ULMACEAE

204b. Ovule 2, basal

...EUPHORBIACEAE

202b. Style unbranched:

205a. Leaves pinnate

...CAESALPINIACEAE

205b. Leaves simple:

206a. Placentation parietal

...FLACOURTIACEAE

206b. Placentation otherwise:

207a. Ovule apical

...MORACEAE

207b. Ovule basal

...URTICACEAE

197b. Ovary 2-more-celled:

208a. Ovules many in each cell:

209a. Herbs; leaves alternate or falsely whorled; ovary 3-5-celled

...MOLLUGINACEAE

209b. Trees; leaves opposite, bifarious; ovary 2-celled

...LYTHRACEAE

208b. Ovules 1-3 in each cell:

210a. Plants armed with stipular spines

...RHAMNACEAE
210b. Plants unarmed:

211a. Inflorescence a spike or catkin:

212a. Plants with milky latex ................................................................. EUPHORBIACEAE

212b. Plants without milky latex:

213a. Styles and locules 3; fruits subtended by a cupular involucre; ovules 2 in each cell .............................................. FAGACEAE

213b. Styles and locules 1-2; fruits not subtended by involucre (usually cone-like); ovule 1 in each cell ...................................... BETULACEAE

211b. Inflorescence other than spikes or catkin:

214a. Inflorescence a capitulate head .................................................. HAMAMELIDACEAE

214b. Inflorescence otherwise:

215a. Leaves opposite; fruit a double samara with 1-seeded; mericarps winged .................................................. ACERACEAE

215b. Leaves spirally arranged, alternate, sometimes in whorl; fruits not as above:

216a. Leaves pinnately compound, if simple then not 3-nerved .................................................. SAPINDACEAE

216b. Leaves otherwise, alternate, distichous, 3-nerved .......................................... BUXACEAE

1b. Vascular bundles scattered in stem; leaves usually parallel veined; flowers mostly 3-merous; seeds with one cotyledon:

217a. Plant body thalloid, not differentiated into root, stem and leaves .......................................................... LEMNACEAE

217b. Plant body differentiated into root, stem and leaves:

218a. Inflorescence a fleshy spadix or dense glomerule with inconspicuous flowers and a large spathe ..................................... ARACEAE

218b. Inflorescence not as above:

219a. Ovary inferior or semi-inferior:

220a. Aquatic herbs ........................................................................ HYDROCHARITACEAE

220b. Terrestrial or epiphytic herbs:
222a. Fertile stamens 1 or 2; pollen in pollinia ... ORCHIDACEAE
222b. Fertile stamens 2; pollen not in pollinia ... BURMAANTIACEAE

221b. Ovary 2 or more-celled:

223a. Fertile stamen 1:

224a. Sepals free or at most connate; anther 1-celled:

225a. Ovules solitary in each cell ... MARANTACEAE
225b. Ovules numerous in each cell ... CANNACEAE

224b. Sepals united into spathaceous tube:

226a. Leaves spiral; sheaths closed ... COSTACEAE
226b. Leaves distichous; sheaths open ... ZINGIBERACEAE

223b. Fertile stamens 2 or more:

227a. Flowers unisexual:

228a. Plants climbers, dioecious; leaves alternate or opposite; bracts simple or absent; capsules winged ... DIOSCOREACEAE
228b. Plants tree like erect; monoecious; lamina at the tip; bracts spathaceous; fruits fleshy not winged ... MUSACEAE

227b. Flowers bisexual:

229a. Leaves fibrous, spine tipped:

230a. Anthers versatile, dehiscing by vertical slits ... BROMELIACEAE
230b. Anthers dorsifixed, dehiscing by longitudinal slits ... AGAVACEAE

229b. Leaves not as above:

231a. Perianth persistent in fruit, tubular, covered with hairs ... HAEMODORACEAE
231b. Perianth not as above:
232a. Fertile stamens 3: ... BURMANNIACEAE

232b. Fertile stamens 6:

233a. Placentation parietal: ... TACCACEAE

233b. Placentation axile:

234a. Plants scapose with tunic, bulbous rootstock: ... Amaryllidaceae

234b. Plants not scapose, with tuberous rhizome or corm: HYPOXIDACEAE

219b. Ovary superior:

235a. Perianth absent or rudimentary or reduced to scales or bristles:

236a. Plant arborescent:

237a. Leaves broadly plicate or pinnatisect: ... ARECACEAE

237b. Leaves not as above:

238a. Plants often with stilt roots; leaves spiral; inflorescence a spadix; fruit a synnarp: ... PANDANACEAE

238b. Plants without stilt roots; leaves distichous; inflorescence not a spadix; fruit a caryopsis: ... POACEAE

236b. Plants herbaceous:

239a. Flowers in globose or hemispheric heads, unisexual, terminal on scape; ovary 2-3-celled: ... ERIOCAULACEAE

239b. Flowers in spikelets with imbricating glumes, bisexual; ovary 1-celled:

240a. Stems terete, cylindrical or flattened, noded; leaf sheaths usually open; flowers enclosed by 2 glumes, anthers dorsifixed or versatile: ... POACEAE

240b. Stems solid, triangular, not noded; leaf sheaths entire or closed; flowers enclosed by single glume; anthers basifixed: ... CYPERACEAE
235b. Perianth distinct, petaloid at least in part:

241a. Perianth segment distinguishable into two heteromorphic series with outer whorl sepaloid and inner petaloid ... COMMELINACEAE

241b. Perianth segments not distinguishable, both perianth segments usually of the same colour, often petaloid or united into a tube below:

242a. Plants aquatic; inflorescence subtended by spathe like leaf sheaths ... PONTEDERIACEAE

242b. Plants terrestrial; inflorescence not subtended by spathe as above:

243a. Perianths densely hairy and persistent in fruit ... HAEMODORACEAE

243b. Perianth not as above:

244a. Leaves modified into phyllode, without lamina ... ASPARAGACEAE

244b. Leaves not modified, with distinct lamina:

245a. Flowers mostly dioecious; anthers 1-celled ... SMILACACEAE

245b. Flowers mostly bisexual; anthers 2-celled:

246a. Plants climbers; stamens usually 4; placentation basiapical ... STEMONACEAE

246b. Plants usually erect; stamens usually 6; placentation axile ... LILIACEAE
FLORA OF MIZORAM

RANUNCULACEAE
(K.P. Singh)

1a. Deciduous, leaves alternate.

2a. Sepals 3-5, herbaceous; petals present, 5

2b. Sepals 4-8, petaloid; petals absent.

...3. Ranunculus

...4. Thalictrum

1b. Climbing shrubs; leaves opposite:

3a. Leaves with terminal tendrils; climbing by means of tendrils; petals present

...2. Naravelia

3b. Leaves lacking tendrils; climbing by means of twining petioles; petals absent

...1. Clematis

1. CLEMATIS L.

1a. Flowers 1-3, in axillary fascicles

...2.C. acuminata

1b. Flowere many, in axillary or terminal racemes or panicles:

2a. Leaves simple

...6.C. sinuata

2b. Leaves compound, ternate or binate:

3a. Plants usually glabrous or glabrescent:

4a. Leaves ternate, distantly serrate; sepalis erect; filaments hairy

...1.C. acuminata

4b. Leaves 5-7 foliolate, usually entire, sepalis spreading; filaments glabrous

...C. genricona

3b. Plants coarsely hairy or densely tomentose-villosous:

5a. Plants coarsely hairy; leaves ternate, rarely pinnate; sepalis ribbed

...3.C. buchanania

5b. Plants densely tomentose-villosous; leaves pinnate or binate:

6a. Leaves densely villosus below and glabrescent above; sepalis spreading from the base

...7.C. wightiana

6b. Leaves densely brown velvety, tomentose on both sides; sepalis erect with recurved tips

...5.C. gowesiiflora

Woody climbers; branches sulcate, glabrous or scarcely puberulus with scattered hairs. Leaves opposite, pinnately 3-foliolate; common petioles 8-12 cm long, ribbed; leaflets ovate or lanceolate, 3-9 x 2-4.5 cm, terminal leaflet longer and broader than the side ones, base rounded or subcordate, subcoriaceous, caudate-acuminate at apex, quite entire to distantly serrate along margins, glabrous or sparsely puberulus, palmately 5-nerved; petiolules 1-2 cm long. Inflorescence in axillary compound panicles, 3-5-flowered, flowers pale yellow, 2-3 cm across, sepals ovate or oblong-lanceolate, yellowish, subglabrous or ± pubescent outside with tomentose borders, pubescent inside, 10-14 x 4-5 mm; filaments hairy, up to 1 cm long. Achenes ovate, compressed, dark brownish, hairy; style feathery, 1-2 cm long.

Fl. & Fr.: October-April.

Siata, alt. ca 1200 m, Parry 534 (fide C.E.C. Fischer, l.c.).


Herbaceous or slightly woody climbers; stems deeply furrowed, shining; branches slender. Leaves opposite, bipinnate, ternate or biternate, 10-15 cm long; leaflets ovate-lanceolate, 2-4 x 1-2 cm, base cuneate or acute to acuminate at apex, margins coarsely serrate or lobed, often 3-lobed, pubescent on both surfaces with straight hairs; petiolules 1-3 cm long. Inflorescence axillary, 1-3-flowered; flowers brownish-yellow, ca 3 cm across; sepals oblong-elliptic, 8-12 x 4-5 mm, purplish, pubescent at margins with long hairs; filaments pilose, up to 1 cm long. Achenes ovate, ± compressed, margined, pubescent, 3-4 x 1-2 mm; style feathery, 2-2.5 cm long.

Fl. & Fr.: September-January.

North Vanlaiphai, ca 1500 m, Parry 377 (fide C.E.C. Fischer, l.c.); Phongphuia, ca 1800 m, Parry 561 (fide C.E.C. Fischer, l.c.).

Woody climbers or stragglers; branches sulcate, densely pubescent. Leaves ternate or rarely pinnate, 3-7-foliolate; petioles flattened at base, 4-7 cm long; leaflets 5-10 x 3-9 cm, broadly ovate or sub-orbicular, sometimes 2-3-lobed, base rounded or cordate, acute to acuminate at apex, coarsely dentate-serrate along margins, glabrescent to sparsely pubescent above, denser beneath specially along the nerves, 5-7-nerved from base; petiolules ribbed, 1-2 mm long, hairy. Inflorescence axillary with leafy panicles, 3 to many-flowered; bracts foliaceous; flowers creamy-white, 3-5 cm across; sepals ovate-oblong, greenish yellow, white tomentose inside, fleshy, densely silky, pubescent outside, 15-20 x 5-7 mm; filaments flat, hairy, ca 1 cm long. Achenes ovate-elliptic, compressed, 3-5 x 2 mm, reddish-brown, densely hairy; style feathery, 3-4 cm long.

*Fl & Fr.: June-March.*

Common and a variable species. Vombuk, 1500 m, *Parry 500* (CAL), as *Clematis tortuosa*; Champhai, Leslie 267 (CAL); Mizo hills, Deb 30821; Hmuifang, ca 1500 m, *Deka s.num.*


Large woody climbers; branches grooved, purple, pubescent when young. Leaves pinnate, 5-7-foliolate, ca 14 x 10 cm; leaflets variable, ovate or elliptic; 5.0-8.5 x 2.0-3.5 cm, distant, base rounded or cordate, acuminate at apex, usually entire along margins, thin, glabrous or sparsely pubescent along nerves, 3-5-nerved from base; petiolules ca 1 cm long. Panicles cymose, axillary or terminal, many-flowered, up to 12 cm long; bracts
Fig. 1: 

Clematis buchananiana DC.
foliaceous, usually round-ovate, rarely lanceolate; flowers white-creamy, 2-3 cm across, scented; sepals oblong-elliptic, pubescent outside, 4-8 x 1-2.5 mm; filaments flat, glabrous, 2-6 mm long. Achenes ovate to elliptic, ± compressed, 4-6 x 1-1.5 mm; style silky, hairy, up to 4 cm long.

**Fl. & Fr.:** August-May.

Common in tropical evergreen forests. North Vanlaiphai, 1500 m, *Parry 372 (fide C.E.C. Fischer, l.c.); Haaruang, Deb 31373.*


Large woody climbers; branches sulcate, densely tomentose. Leaves ternate to 3 5 foliaceous, 10 15 cm long; petioles 2 3 cm long; leaflets broadly ovate, 3.5-8.5 x 2-6 cm, base cuneate or rounded, acute to acuminate at apex, dentate-serrate at margins, often lobed, densely brown velvety tomentose on either sides, 5-nerved from the base; petiolules 1-2.5 cm long. Panicles brown, tomentose, axillary, many-flowered, up to 18 cm long; bracts foliaceous, ovate-lanceolate; flowers greenish or whitish, ± 2.5 cm across; sepals ovate-oblong, tomentose outside, puberulous inside, 15-20 x 8-10 mm; filaments densely hairy, 2-2.5 cm long. Achenes ovate, flat, velvety hairy, 3-5 x 1.5 mm; style densely white-silky, 2.5 cm long.

**Fl. & Fr.:** August-March.

North Vanlaiphai, 1500 m, *Parry 382 (CAL); near Lungleh fort, 900 m, *Gage 29 (CAL).*


Tall woody climbers; branches furrowed, glabrous, green or purple. Leaves simple or sometimes ternate, broadly ovate, 6-15.5 x 5-10 cm, base cordate or rounded, acute to micronate at apex, entire at margins, subcoriaceous, usually glabrous on both sides or sometimes few scattered
hairs below, often purplish beneath, 3 or 7-veined from the base; petals 4-8 cm long, often twining above, glabrous. Panicles 12-25 cm long, axillary or terminal, 3 or more flowered; bracts foliaceous, elliptic-lanceolate; flowers purplish brown, 3-3.5 cm across, sweet-scented; sepals oblong or oblong-lanceolate, mucronate, ribbed, greenish brown, tomentose outside, 12-18 x 2-5 mm; filaments linear, glabrous, inner stamens shorter with longer anthers, 4-12 mm long. Achenes elliptic-ovate, 8-10 x 2-4 mm, elongate, compressed, pubescent; styles ca 4.5 cm long, feathery.

Fl. & Fr.: August-March.

Reported by C.E.C. Fischer (l.c.).


Large woody climbers, densely covered all over with shining brownish hairs; branches furrowed, villous. Leaves pinnate, 3-5-foliolate; leaflets ovate-lanceolate or orbicular, 5-7 x 3-4.5 cm, entire or 3-5-lobed, base ovate-cordate, acute or mucronate at apex, ± dentate along margins, chartaceous, densely villous and velvety on both sides, nerves prominent beneath; petioles 8-10 cm long. Inflorescence axillary or terminal, paniculate; bracts ovate-linear; flowers pale yellow or golden yellow, ca 5 cm across; sepals ovate or oblong-elliptic, ribbed, brown, tomentose outside, glabrous inside, 20-30 x 5-10 mm; filaments linear, glabrous at the base and tips, hairy in between. Achenes ovate, hairy, compressed, 4-5 x 2-2.5 mm, style white feathery, 3-3.5 cm long.

Fl. & Fr.: November-May.

Sialsuk to Aizawl, Deb 30844.

2. NARAVELIA Adans.


Fig. 2.
Fig. 2: Narvelia zeylanica (L.) DC.
Large woody climbing shrubs, up to 12 m long; branches sulcate, pubescent. Leaves trifoliolate, ca 14 cm long; petioles 3-4 cm long; lateral leaflet modified into 3-fid hooked tendril; lateral leaflets usually of unequal in size, ovate-rotundate, 5-11.5 x 4-7 cm, base rounded-truncate or cuneate, acuminate at apex, entire along margins, subcoriaceous, tomentose beneath, sparsely hairy or glabrous above, more densely hairy on nerves, beneath 5-7 nerved; petiolules 1.5-2 cm long, densely hairy, twisted. Panicles divaricately branched, tomentose, terminal and axillary, up to 12 cm long, flowers greenish-white, 1.5-1.8 cm across; sepals 4-5, elliptic to obovate, ca 6 x 3 cm, caduceous; petals 6-12, narrow, oblong, ca 6 x 1 mm; stamens yellowish, many. Fruit a head of tailed achenes, pointed at both ends, twisted, brown, 5 x 1 mm; tail 3-6 cm long, finely hairy, slender, persistent.

Fl. & Fr.: October-March.

Spreading on bushes in dense forests, Sairang, Deb 30605 (CAL); Tithlang, K.P. Singh 94055.

3. RANUNCULUS L.

1a. Small herbs, leaves lobed; achenes turgid, not margined

1b. Large herbs, leaves deeply divided;

   achenes flattened with an intramarginal rib

   ...1. R. cantoniensis


   Fig. 3.

Erect or prostrate hairy herbs, up to 1 m long; stems 15-50 cm long. Radial leaves ternately divided into 3 leaflets; petiolules 5-15 cm long or sometimes more long, sheathing at base; leaflets 3-8 x ca 4 cm, deeply cut into narrow segments; cauline leaves with smaller petioles, the upper ones sessile; leaflets tripartite, 3-8 x 5-10 cm, deeply cut into linear or oblongate lobes, appressed pubescent; petiolules 1-4 cm long. Flowers 1.2-1.5 cm across; solitary, yellow; sepals 5, elliptic-oblong, 3-4 x 2 mm, reflexed, hirsute; petals 5, oblong, 5-6 x 3-4 mm, yellow to creamy white. Achenes in globose heads, broadly elliptic, compressed, surrounded by a narrow marginal rim. ca 2 mm across, ± beaked.
Fig. 3: Ranunculus cantoniensis DC.
Fl. & Fr.: May-December.

Mizo hills, Dunn 34008, 95902


Suberect, perennial, hairy herbs; stems many, ascending, branched, 5-15 cm long. Basal leaves 3-many; lamina deeply 3-partite, reniform, 8-16 x 5-20 mm, hairy, middle lobes large, entire or tricuspidate, lateral segments deeply 2-lobed, leaf bases cordate to truncate, petiolules 2-6 cm long; cauline leaves palmately 3-5 partite with amplexical base and narrow lobes. Flowers 1-1.5 cm across, yellow; sepals oblong, 3-5 x 1.5-2 mm, hairy; petals 5, obovate, clawed, 3-6 x 3-4 mm; nectaries cupshaped. Achenes oblong or suborbicular, on pilose or glabrous receptacle, hairy when young, 1-1.5 mm long.

Fl. & Fr.: May-October.

Grierson and Long (1984) reported that the records of R. hirtellus from eastern Himalaya probably refer to R. adoxifolius Handel-Mazzetti.

North Vanlaiphai, 1500 m, Parry 243 (fide C.E.C. Fischer, l.c.).

4. THALICTRUM L.

1a. Leaves simple; panicles few-flowered...
1b. Leaves biternate; panicles many-flowered...


Erect perennial herbs, ca 50 cm high. Leaves ternate or biternate with sheathing base; leaflets up to 9, ovate or orbicular, 2-5 cm across, base cordate, shallowly 5-lobed, toothed along margins, glaucous or pubescent beneath, sheath auricled; petiolules 2-5 cm long. Panicles branched, corymbose; flowers white or purplish; sepals elliptic, ca 4 x 3 mm;
filaments filiform; anthers acute at apex. Achenes ellipsoid, ca 2 mm across, sessile, strongly ribbed and glandular pubescent; beak ca 1 mm long.

Fl. & Fr.: July–September.

Lushai hills, Parry 24 (CAL).


Erect herbs; stems ca 25 cm long. Leaves simple, orbicular, 5–7 cm in diam.; lobes toothed, membranous, reticulate, scabrous on both sides; stipules free, oblong. Panicles few-flowered; filaments filiform. Achenes oblong with a straight beak at the tip.

Fl. & Fr.: July–August.

On moist, stony cliffs. Siatsuk, 1500 m, Parry 17 (fide C.E.C. Fischer, l.c.).

Note: This species has not been included in the Flora of India (Sharma et al., 1993), although it was reported earlier from the area by C.E.C. Fischer (l.c.).

DILLENIACEAE

(K.P. Singh)

1a. Trees; flowers solitary or in clusters

1b. Shrubs or lianas; flowers in terminal panicles

1. DILLENIA L.

1a. Flowers ebracteate, fascicled, yellow; carpels 5

1b. Flowers bracteate, solitary, white; carpels 15–25

...2. D. pentagyna

...1. D. indica

Evergreen trees, up to 30 m tall. Leaves oblong to elliptic, 12-30 x 5-12 cm, base rounded or attenuate, acute to acuminate at apex, serrate at margins, glabrous above, hirsute along veins beneath; lateral nerves 30-50 pairs; petioles winged, 3-7 cm long. Flowers solitary, terminal, white, bracteate, pendant, 15-20 cm across; sepals 5, obovate, fleshy, 4-5 x 3-4 cm; petals obovate, rounded at apex, cadaceous, 6-8 x 4-6 cm; stamens many, anthers opening by apical pores; carpels 15-25, flattened. Pseudocarps 8-10 cm in diam., yellowish green, indehiscent, subglobose, enclosed by persistent sepals; fruiting carpels each with 5 seeds embedded in the pulp; seeds reniform, compressed, reddish, hirsute along outer margin, ca 6 x 4 mm.

Fl. & Fr.: June-February.

Common in tropical and subtropical forests. Kolasib, I.B. Camp, Datta 33377.


Deciduous trees, 15-25 m tall. Leaves obovate, 20-60 x 10-20 cm, base cuneate, obtuse or subacute at apex, serrate along margins, glabrous above, pubescent on veins beneath; lateral nerves 25-50 pairs; petioles 2-5 cm long. Flowers 3-8 fascicled, 3-4.5 cm across, greenish to bright yellow, fragrant, ebracteate; sepals 5, ovate reddish, 2.5-4 cm long; petals 5, obovate, bright yellow, 15-20 mm long; stamens in 2 series; outer numerous, shorter; inner few, longer; outwardly reflexed; anthers opening by longitudinal slits; carpels 5, oblong, unilocular. Pseudocarps ca 1.5 x 1.3 cm in diam., subglobose, drooping, yellow to orange-red, indehiscent, fleshy, 1 (-2)-seeded; seeds ovoid, black, glabrous, ca 5 x 3 mm.

Fl. & Fr.: June- November.

Common in tropical and subtropical area. Kawthirir, 1200 m, Parry 311 (fide C.E.C. Fischer, i.e.); Mawmangtlang 1500 m, Parry 513 (fide C.E.C. Fischer, i.e.).
Fig. 4: Dillenia indica L.
2. **TETRACERA L.**


Erect shrubs, up to 3 m tall, or scandent, up to 6 m, branched; young branches scabrid, sparsely hirsute. Leaves elliptic or obovate, 5-10 x 3-5.5 cm, cuneate at base, shortly acute to obtuse at apex, subentire to shallowly serrate in upper part along the margins, scabrid-papillose hairy on both surfaces; lateral nerves 10-14 pairs; petioles up to 2 cm long. Flowers whitish, in terminal panicles, 8-10 mm across; sepals elliptic, 3-4 mm long, ciliate; petals obovate, same size as sepals; stamens numerous. Follicles 5-10 x 5 mm, ovoid, beaked, glossy, purplish; seeds ovoid, ca 4 x 3 mm, black.

*Fl. & Fr.*: May-December.

*Scarce. s. loc.* *Lairamngthinglova* 08019.

**MAGNOLIACEAE**

*(K.P. Singh)*

1a. Flowers axillary; gynoecium stipitate; carpels free, dehiscing along dorsal suture  

1b. Flowers terminal, gynoecium sessile, carpels united, dehiscing transversely around base

1. **MAGNOLIA L.**

1a. Small trees; flowers sweet-scented; sepals and petals not reflexed  

1b. Tall trees; flowers not scented; sepals and petals reflexed


Small evergreen trees, 8-25 m tall. Leaves oblanceolate, 16-45 x 7-11.5 cm, base attenuate or cuneate, acuminate or apiculate at apex, entire, glabrous; lateral nerves prominent beneath, 15-25 pairs; petioles 2-4 cm long, thickened at base with supalar scar along the entire length. Flowers large, terminal, white or pink, fragrant, 6-10 cm across; sepals 3, white, pinkish tinged, oblong, fleshy; petals 6-9, not reflexed; stamens sessile, yellowish; carpels sessile, glabrous. Fruiting receptacles ellipsoid, 8-10 x 4-6 cm; ripe carpels sharply beaked, ovoid; seeds 3-4 in each carpel, oblong, 8-9 x 0.7 mm, plano-convex, red.

Fl. & Fr.: April-October.

Kawthou, 600 m, Parry 361 (fide C.E.C. Fischer, i.c.); Dutta 34098, 33598.


Tall trees, 20-25 m with conical crown; young parts tomentose. Leaves elliptic or oblanceolate, 18-32 x 5-9 cm, base attenuate, shortly acuminate at apex, entire along margins, coriaceous, glabrous, shiny above; lateral nerves 10-20 pairs; petioles up to 2.5 cm long. Flowers solitary, terminal, 5-8 cm long, not fragrant, white; bracts tomentose; sepals 3, suborbicular, caducous; petals, 9 in 3 whors, elliptic or obovate, outer whorl reflexed; stamens many. Fruiting receptacles woody, 7-15 x ca 4 cm; ripe carpels 20, dehiscent by ventral suture; pits rhomboidal.

Fl. & Fr.: April-October.

Reported by C.E.C. Fischer (i.c.).

CULTIVATED SPECIES

Evergreen trees with hoary tomentose young branches. Leaves elliptic-oblong, ovate to obovate, rusby tomentose beneath; buds concealed in stipular sheaths. Flowers white, solitary, fragrant, 10-25 cm across; perianth 9-15; stamens many; carpels 1-2-ovulate, rusty brown tomentose in fruits. Seeds bright red.

_Fl._ & _Fr._: April-May.

A native of southern United States, widely cultivated in the gardens as an ornamental.

2. _MICHELIA_ L.

1a. Perianth parts more than 4 cm long

1b. Perianth parts less than 4 cm long:

2a. All parts glabrous

2b. Young parts hairy:

3a. Young parts rusty tomentose; stipular scars indistinct; flowers white; carpels bi-ovulate

3b. Young parts yellowish or greyish pubescent; stipular scar 1-2 cm long; flowers yellow; carpels with 3 or more ovules


Fig. 5.

Large ever-green trees, up to 30 m tall; crown conical and narrow; branches grey to rusty tomentose. Leaves elliptic-lanceolate or oblong-lanceolate, 8 15 x 4 6.5 cm, base acute or cuneate, acute to acuminate at apex, entire along margins, thinly coriaceous, glabrous above, minutely pubescent on midrib beneath, glabrescent when mature; lateral nerves 12-14 pairs; petioles up to 2 cm long, swollen at base, pubescent; stipular scars inconspicuous; bracts deltoid, ca 2.5 cm long. Flower buds ovoid-ellipsoid, enclosed in silky scales; flowers solitary, axillary, erect, 2.5-3 cm across. pale-white; perianth parts 12-18, ca 2 x 0.5-0.6 cm, lanceolate or
Fig. 5: Michelia baillonii (Pierre) Finet & Gagnepain
strap shaped. Fruiting receptacle subcylindrical, 6-8 x 2-4 cm; ripe carpels many, woody, obliquely ovoid, biovulate, whitish-grey speckled on their surface, ca 1-1.5 cm long; seeds bright red, ± ellipsoid, 5-7 x ca 5 mm.

*Fl. & Fr.* July-September.

Scarce in the area. Tuivawl, *M. Sawmliana* 99247; Ratu, alt 800 m, *M. Sawmliana* 101753.


Evergreen trees, 15-25 m tall. Leaves ovate-elliptic, 8-18 x 3-7.5 cm, base cuneate, long acuminate at apex, entire, glabrous and shining above, glabrescent beneath; lateral nerves 12-18 pairs; petioles 2.5-3.5 cm long; stipular scar 1-2 cm long; bracts spatheoid. Flowers solitary, axillary, 4-5 cm across, light yellow, fragrant; perianth parts 12-15, 2-3 x 0.7-1 cm, petaloid, ob lanceolate, fleshy. Fruiting receptacles cone like, 8-11 cm long, drooping; ripe carpels woody, ovoid-ellipsoid, white speckled, 1-2 cm long; seeds many.

*Fl. & Fr.* April-June.

In dense shady forests. A very valuable timber species, sometimes cultivated, Ajawal, *Leslie* 20 (CAL); Kalchau, on way from Saiha to Sangan, *K. P. Singh* 9680b; Kawnipi, *K. P. Singh* 97024.


Trees, 10-25 m tall, deciduous; young parts ferruginous-tomentose. Leaves elliptic or ob lanceolate, 8-20 x 4-7 cm, base cuneate, acute or acuminate at apex, entire, glabrous above, densely pubescent beneath at first; lateral nerves 7-10 pairs; petioles 2-4 cm long, glabrous, smoothens
Fig. 6: Michelia champaca L.
at base; stipular scar 5-8 mm long. Bracts brown, scirceous; flowers, axillary or pseudoterminal, 8-14 cm across, creamy white, sweet scented; perianth parts 9-12, oblong-elliptic, 4.5-5 x 1-2.5 cm, petaloid; stamens yellowish. Fruiting receptacles 8-13 x 4-6 cm; ripe carpels obliquely ovoid, ca 1.5 x 0.8-1 cm, beaked, woody; seeds 1-2, red, oily, compressed.

Fl. & Fr.: February-September.

Often cultivated, a very valuable timber tree, used for building and furniture making. Phongphui, 1800 m, Parry 144 (fide C.E.C. Fischer, l.c.).


Trees, up to 40 m tall. Leaves oblong-elliptic or oblong, 10-18 x 5-6 cm, base acute or cuneate, abruptly acuminate at apex, entire, glabrous on either side; lateral nerves visible on both surfaces, 10-12 pairs; petioles 1.5-2.5 cm long, swollen at base; stipular scar 7-9 mm. Flowers axillary, solitary, 2-3 cm across, white; perianth parts white, 12, oblong-elliptic, petaloid, 2.5-3 x 0.8-1 cm. Fruiting receptacles 10 -16 cm long; ripe carpels 1-2 cm long, sessile, subglobose, beaked, speckled.

Fl. & Fr.: February-November.

South Mizoram, _Wenger s.n._

**SCHISANDRACEAE**

_(K.P. Singh)_

1a. Leaves entire, fruitlets borne on elongated axis ... 2. _Schisandra_

1b. Leaves denticulate, fruitlets crowded in a subglobose to globose clusters ... 1. _Kadsura_

1. **KADSURA** A. Juss.

Evergreen, climbing shrubs, glabrous. Leaves elliptic to ovate-lanceolate, 8-14 x 3-5.3 cm, base rounded or cuneate, acute at apex, distantly denticulate to entire at margins, glabrous; lateral nerves 10-15 pairs; petioles 1-2 cm long. Flowers axillary, solitary, 0.6-1.3 cm across, perianth parts 11-15, in 3-4 whorls, whitish, turning pale-creamy. Male flowers: stamens 12-15 or rarely more, outer filaments free, inner filaments connate. Female flowers: carpels angular, many with sessile stigma, 2-2.5 mm long; densely packed into a subglobose head, head 0.8-1 cm diam.; ovules 2-4 in each carpel. Fruiting head globose or subglobose, 3-4.5 cm across; fruitlets globose, 1-1.5 x 1.5 cm, fleshy, scarlet-red; seeds orbicular, compressed, ca 8 mm in diam.

Fl. & Fr.: August-December.

In subtropical evergreen forests. Sialsuk, 1500 m, Parry 426, (fide C.E.C. Fischer, l.c.).

2. SCHISANDRA Michx.

1a. Deciduous climbers; stamens monadelphous below; anthers free

1b. Evergreen climbers; stamens in one globose mass; anthers sessile


Deciduous woody climbers. Leaves lanceolate, elliptic or oblanceolate, 5-10 x 2-7 cm, base rounded or cuneate, acute or shortly acuminate at apex, denticulate at margins, membranous, glabrous above, glaucous beneath; lateral nerves 4-6 pairs; petioles 1-3 cm long, channelled above. Panicles 1-5 cm long; flowers 1-3 cm across, fascicled or solitary, yellowish; perianth parts 7-8, orbicular, 5-10 x 5-8 mm, yellowish inside. Male flowers: Stamens spirally arranged, monadelphous below, free and
tubular above; Female flowers: Carpels 10-24, on 1.5-1.8 mm long column; ellipsoid, 3-5 x 2 mm; fruitlets 10-30, sessile, oblong-ellipsoid, indehiscent, not beaked, red when ripe, 4-7 mm long, seeds 1-2, globose.

Fl. & Fr.: May-September.

In subtropical forests. Thalalthang, Dutta 53987.


Woody climbers; branchlets angular, succulent. Leaves ovate-lanceolate, 6-10 x 2-5 cm, base cuneate, acuminate at apex, serrate-toothed at margins, glabrous and shining above, pale and minutely gland dotted beneath; lateral nerves 6-8 pairs; petioles 1-2.5 cm long. Flowers axillary, solitary, 1-2 cm across, scarlet, slightly scented; pedicels 2-3 cm long; perianth parts 6-10 in male flowers and 8-16 in female flowers, 5-6 x 5 mm, ovate to obovate. Stamens 10-12, connate into a globose, brick-red fleshy mass, anthers sessile, embedded in the mass of filament. Fruiting axis 4-6 cm long (excluding pedicel part) with 20-30 fruits; ripe carpels fleshy, 4-7 x 4-5 mm, 1-2-seeded.

Fl. & Fr.: August-November.

Hmuisang, ca 1500 m, Parry 296 (fide C.E.C. Fischer, l.c.).

ANNONACEAE

(K.P. Singh)

1a. Climbing or scrambling shrubs:

2a. Ripe carpels moniliform; inner petals not thick and fleshy

2b. Ripe carpels not moniliform; inner petals thick and triquetrous above

1b. Erect shrubs or trees:

... 3. Fissistigma
3a. Petals all equal, spreading:

4a. Flowers solitary; ripe carpels reniform, more than one-seeded

4b. Flowers fascicled; ripe carpels ovoid or ellipsoid, 1-seeded

...2. Desrovia

...6. Polyalthia

3b. Petals unequal or subequal:

5a. Flowers red, outer petals smaller than inner ones, sepaloid; inner petal sometimes pouched and coherent at base

...5. Milium

5b. Flowers yellowish, outer petals longer than inner ones:

6a. Ripe carpels solitary, many-seeded

6b. Ripe carpels many, one-seeded

...1. Cyathocalyx

...4. Goniothalamus

1. CYATHOCALYX Cham. ex Hook. f. & Thomson


Evergreen trees, up to 10-12 (48) m tall. Leaves ovate or elliptic-oblong, 8-15 x 3-6 cm, base cuneate, abruptly acuminate at apex, entire, coriaceous, glabrous, shining on both surfaces; lateral nerves 8-12 pairs; petioles 1-1.5 cm long. Flowers solitary, sometimes 2-3 together, 1.5-2 cm across, extra axillary, densely pubescent; sepals ca 1 cm long, oblong, reflexed above, deeply 3-lobed to the middle; petals in 2 whorls of 3 each, 2-3 cm long, clawed, yellowish, thick; stamens many, truncate at top, ca 2 mm long; anthers extrorse, solitary or paired, oval-oblong, greenish-white; carpels 3-4 mm long. Ripe carpels berried, turning into cherry colour, blant at top, ca 10 cm long, 5-6 cm across; pericarp fleshy; seeds many, brown, oblong, flat with blunt ridge around, 3-3.5 x 1.5-2 cm.

Fl. & Fr.: April-December.

In moist shady places. Dampa, D K. Singh 98986.
Timber is soft and very elastic. The sweetish aromatic pulp of the ripe fruit is eaten.

2. DESMOS Lour.

1a. Petals 2-3, connate; inner whorl absent; flowers horn shaped, reddish-brown or orange outside ...3. D. longiflorus

1b. Petals 6, free, in two whors:

2a. Erect, sermentose shrubs; leaves glabrous above; flowers 5-7 cm across, pale-yellow ...1. D. chinensis

2b. Climbing shrubs; leaves glabrescent above; flowers 10-20 cm across, yellowish-green ...2. D. dumasus


Evergreen, erect or sermentose shrubs, up to 5 m high. Leaves bifarious, oblong-elliptic or oblong-lanceolate, 5-9(15) x 3-4.5 cm, base rounded or subcuneate, bluntly acuminate or acute at apex, entire, glabrous above, greyish and minutely pubescent below; petioles 3-6 mm long. Flowers extra-axillary, 5-7 cm long, leaf opposed, pale yellow, solitary; sepals 3, ovate, acuminate, nearly glabrous, 5-7 x 4-3 cm; petals 6(3+3), elliptic-lanceolate, clawed at base, outer petals 5-5.5 x 1.8-2 cm; inner petals 3.8-4 x 0.8-1 cm, glabrous or minutely pubescent; stamens many, sessile, with spreading tip; carpels numerous, sessile, oblong, 1-2 mm long. Ripe carpels many, moniliform, 2-6, joined, 2-4 cm long, 4-5 mm thick; segments ovoid; seeds 2-3, brownish, shiny.

Fl. & Fr.: April-November.

Lushai hills, Parry 24 (CAL); Theiriat, Deb 31315.

Fig. 7: Desmos dumosus (Roeb.) Safford
Scandent shrubs with thickened loops and coils. Leaves ovate, elliptic-oblanceolate, 6-12 x 3-5 cm, base rounded or subcordate, acuminate at apex, entire at margins, glabrous or glabrescent above, pubescent on midrib, brownish pubescent beneath; lateral nerves 8-12 pairs; petioles 2-6 cm long, hairy. Flowers extra axillary or terminal, solitary, pendulous, yellowish green, 10-12 cm across; sepals 3, 8-10 x 5-7 mm, ovate, pubescent; petals 6(3+3), outer petals 5-5.5 x 2-2.3 cm, oblanceolate, fine pubescent; inner petals 4.5-5 x 0.5-1 cm, narrow; stamens many, flat-topped; carpels many, ca 2 mm long. Ripe carpels dark red, many, moniliform, up to 3 cm long, pubescent, constricted, 1-4-seeded, 2-3-jointed.

_Fl. & Fr.:_ May-December.

In open forests, South Labuan hills, 990 m, Wengera 217 (fide C.E.C. Fischer, l.c.); Theirist, Deb 31331; Aizwal Zoo, Near panther cave, Latramkhinglova 197.


_Erect glabrous shrubs to small trees, 5-8 m tall. Leaves oblong-lanceolate, 1.5-30 x 5-8 cm, base rounded or cuneate, acuminate at apex, entire at margins, shining and glabrous above, glaucous beneath; lateral nerves 10-16 pairs; petioles 1.5-2 cm long. Flowers solitary, axillary, drooping, 4-10 cm long, horn shaped, reddish brown or orange outside, yellow inside; sepals 3, broadly triangular, 2-3 x 2-3 mm, minutely pubescent; petals 3, spatulate, red, fleshy, puberulous when young, clawed at base, 8-15 x 1-1.5 cm; inner whorl absent; stamens many, closely packed; carpels many, ovoid, 2-4 mm long. Ripe carpels 15-20, borne on 3-4 cm long fruiting stalks, 4-7.5 cm long, moniliform, jointed, each with 1-4-seeded segments; segments 1.8-2.2 x 0.7-0.8 cm, terminal apiculate._

_Fl. & Fr.:_ April-December.

In moist shady places. Selegkawn, 600 m, Parry 177 (fide C.E.C. Fischer, l.c.); Kawthlir, Parry 396 (fide C.E.C. Fischer, l.c.); Aizawl, 900
Fig. 8: Desmos longiflorus (Roxb.) Safford
3. **FISsistigma** Griffith


Woody climber, branches brown, glabrous. Leaves oblong-cilindric, 6-14 x 3-5 cm, base rounded or cuneate, acute at apex, ± coriaceous, glabrescent above and pubescent beneath, glabrous with age, lateral nerves 15-20 pairs; petioles 0.8-1 cm long. Flowers 3-6 together, in sub-umbellate cymes, leaf opposite, bracteate and bracteolate, ca 6 mm across, pale orange-red, fragrant, sepals 3, ovate, greyish, tomentum, 0.3-0.4 x 0.2 cm; petals 6(3+3), red; outer ovate, tormentose outside, 5-6 mm long, inner thicker, glabrous except near apex; stamens numerous; carpels also numerous; styles hairy. Ripe carpels many, globose; berries, 1-2 cm across, apiculate; seeds many in 2 rows, brown.

*Fl. & Fr.:* December-June.

*Theiriat*, Deb 31330.

4. **GONIOTHALAMUS** (Blume) Hook. f. & Thomson


Sparingly branched, erect undershrubs, up to 3 m tall. Leaves oblong, 20 -30 x 5-10 cm, base rounded or cuneate, acuminate at apex, entire and recurved at margins, glabrous, coriaceous; lateral nerves 15-20 pairs; petioles 1-1.5 cm long. Flowers 1.5-2 cm long, axillary, solitary and fascicled, greenish yellow, bracteate at base; sepals 3, 5.6 x 5 mm, ovate, acute; petals 6(3+3). ovate lanceolate, shortly clawed and free in lower
region, outer ones ca 2 x 0.5 cm, inner ones ca 1.2 x 0.4 cm; stamens many, ca 1 mm long; carpels hairy. Ripe carpels ca 2 x 1 cm, subsessile, ovoid to ellipsoid, orange-red when mature; seeds solitary, transversely grooved.

_Fl. & Fr.: May-December._

Lungleh, 1110 m, _Gage 95 (CAL); Deh 31091._

5. **Miliusa** Leschen. ex A. DC.


Small trees, 3-10 m tall. Leaves bifarious, ovate-lanceolate or oblong-elliptic, 3-15 x 2-4.5 cm, base rounded, abruptly acuminate at apex, oblique, glabrous above, midrib pubescent above, glabrescent beneath, glabrous with age; lateral nerves ca 10 pairs; petioles 2-3 mm long. Flowers bisexual or unisexual, 1-1.5 cm across, axillary or extra axillary or leaf-opposed, solitary or fascicled, red, drooping; sepals 3, linear-lanceolate, 2-5 x 1 mm, narrow; petals 6(3+3), crimson red, fleshy; outer ones 3-5 x 1.5-2 mm, hairy, spreading; inner ones ca 1 x 0.8 cm, erect, ovate; stamens many, ca 1 mm long; carpels ovate. Ripe carpels 0.8-1 cm long, obovoid or subglobose, on 1-2 cm long stalks, glabrous-verrucose, usually 1-seeded; seeds 4-5 x ca 3 mm.

_Fl. & Fr.: April-December._

Saitthah, _D.K. Singh_ 92922.

6. **Polyalthia** Blume

Heiraint (Lushai); Themeunaw (Lakher).

Trees, 15-30 m tall. Leaves bipinnatus, elliptic-oblancoate to ovate oblong, 8-25 x 3-10 cm, base rounded or subcuneate, acute to acuminate at apex, entire at margins, subcoriaceous, dark green and shining above, glabrous; lateral nerves 12-16 pairs; petioles 0.8-1.2 cm long. Flowers 3-3.5 cm across, 2-3 fascicled on small woody leafless branches, or on tubercle on older branches, greenish-yellow; pedicels 2-3.5 cm long; sepals 3, ca 3.5 x 3 mm, broadly ovate to triangular, pubescent outside; petals 6(3+3), strap shaped, puberulous outside; outer ones 1.5-2 x 0.3-0.4 cm; inner ones 2.2.5 x 0.3-0.4 cm; stamens many. Ripe carpels ca 40, 2-3.5 cm long, glabrous, obovoid, orange-red to black, borne on 2-3 cm long stalks; seeds ovoid, grooved and transversely ribbed, 2-3 cm long.

**Fl. & Fr.: June-September.**

Recorded on the basis of C.E.C. Fischer (t.c.).

**CULTIVATED TAXA**


Cultivated as an avenue tree.

**MENISPERMACZEE**

(K P. Singh)

1a. Leaves elliptic or oblancoate:

2a. Leaves membranous, base sagittate; lateral nerves 3-5 pairs... 3. *Parabawe*

2b. Leaves coriaceous, base acute or cuneate; lateral nerves 7-9 pairs... 5. *Pychnoboea*

1b. Leaves ovate or orbicular:

3a. Leaves peltate:
4a. Inflorescence umbellate or subcapitate; carpels solitary; style 3-6-partite

4b. Inflorescence paniculate, cymose or racemiform:

5a. Sepals free; male flowers in dense corymbose cymes; female flowers aggregated in the axils of foliaceous suborbicular bracts

5b. Sepals connate; male and female flowers paniculate or racemiform, borne on old wood, bracts not foliaceous, if present linear or very small

6a. Leaves hastate or sagittate, basal lobes acute

6b. Leaves otherwise, basal lobes rounded:

7a. Inflorescence axillary, cymose

7b. Inflorescence racemose or paniculate-racemose

1. CISSAMPELOS L.


_Fig. 9._

Twining shrubs with young parts usually tomentose or pubescent. Leaves broadly ovate, or orbicular, peltate, 3.8 x 4.8 cm, base cordate, rounded or truncate, mucronate at apex, entire at margins, pubescent above, glaucous beneath, palmately 5-7-nerved; petioles 3-8 cm long, inserted at base of lamina, puberulous. Inflorescences pendulous; male flowers greenish-yellow in subcorymbose cymes; peduncles 2-5 cm long, tomentose; sepals 4-6, ca 1 mm long, pilose; petals 4, ca 1 mm long, connate into a cup; stamens connate into a column with 4 anthers at tip; female flowers 1-1.5 mm across, greenish, crowded in the axils of tomentose, foliaceous bracts; bracts 5-10 mm long, ovate; sepals and petals obovate; carpel 1; style 3-fid, glabrous. Drupes 4-5 x 3-4 mm diam., reddish, compressed, obovoid-globose, hirsute, ridged.
Fig. 9: Cissampelos pareira L. var. hirsuta
(Buch.-Ham. ex DC.) Forman
Fl. & Fr.: August-January.

Common in tropical forests. Sairang, 660 m, Deb 30596; Lungleh-Haumang, 660 m, Deb 31386; Mizo hills, Dutta 33223; Lawngtalai-Ngengpui road, K.P. Singh 92891; Kheitum, K.P. Singh 93986; Khawalkhul-Tuichang road, K.P. Singh 94432; Hnathial, K.P. Singh 96643.

2. CYCLEA Am. ex Wight

1a. Flowers ebracteate and ebracteolate

1b. Flowers bracteate and bracteolate

... 1. C. meeholdii

... 2. C. bicristata


Tall twining shrubs; branches striated. Leaves broadly ovate, or oblong-deltoid, subpellate, 7-12 x 6-9.5 cm, base truncate or subcordate, long acuminate at apex, glabrous above, pubescent beneath; petioles 4-6 cm long, pilose. Flowers yellowish, in fascicles on 5-10 cm long panicles, axillary or on old leafless stems; bracts linear-lanceolate. Male flowers: sepals 4-8, campanulate, connate into a cup, fleshy, ca 1 mm long; petals absent. Female flowers: sepals 2, ca 1 mm long, in an opposite pair pouched below; petals absent. Drupes 4-5 mm diam., orbicular, compressed, red, pilose; endocarp with a double row of peg like projections around the edge on either side; seeds horse-shoe shaped, curved.

Fl. & Fr.: August May.

In evergreen forests. Lungleh, 900 m, Gage 43 (CAL); Theirial, Deb 31275, 31334 (CAL).

2. Cyclea meeholdii Diels in Engler, Pflanzenr. 46: 315. 1910; Gangopadhyay in Sharma et al., Fl. India 1: 325. 1993. Fig. 10.

Tall climbing shrubs, ca 3 m high; branches striate, pilose. Leaves broadly cordate, 9-13 x 8-10 cm, acuminate at apex, entire at margins, membranous, glabrous above, hispid beneath; nerves palmate, distinct
Fig. 10: Cyclea meeboldii Diels
below: petioles 4-6 cm long, hispid. Male inflorescence paniculate. 8-12 cm long, hispid, branched; cymes capitate with ebracteate, congested flowers; sepal 4, 1-2 mm long, hairy; petals 4, free, ovate, ca 1 mm long, glabrous. Inflorescences subsessile, ca 4 cm long, hispid. Drupes hispid, ca 4 x 4 mm; endocarp tuberculate.

*Fl. & Fr.*: October-March.


3. **PARABAENA** Miers


Climbers with milky juice. Leaves ovate-cordate or sagittate, 7-16 x 5-7 cm, base ± deeply cordate with acute basal lobes, acuminate at apex, margins shallowly toothed, glabrous above, weakly hisrate beneath; petioles 4-9 cm long, pubescent. Flowers axillary, solitary or few to many in 3-8 cm long, hisrate, dichotomous cymes, occasionally thyrsoid. *Male flowers*: sepals 6, yellow, 1-2 cm long, pubescent; petals cuneate, ca 1 mm long; anthers 6, free. *Female flowers*: sepals and petals same as in male flowers; staminodes 6; carpels 3, style scar subterminal. Drupes globose, 3-5 x ca 4 mm, sharp tubercled on the back, orange; endocarp with 2 rows of spines.

*Fl. & Fr.*: May-November.


4. **PERICAMPYLLUS** Miers

Fig. 11: *Parabaena sagittata* Miers *ex* Hook. *f.* & Thomson

Climbing, woody shrubs, young parts tomentose. Leaves broadly triangular-ovate, 4-10 x 2-8 cm, base truncate or cordate, acute to mucronated at apex, entire to undulate along margins, pubescent above, pubescent beneath; basal nerves 5; petioles 2-5 cm long, tomentose. Flowers small, yellowish-greenish, in 2-6 cm long, axillary, paniculate cymes. Male flowers: sepals 9 in 3 whorls, greenish-yellow, pubescent; outer ones minute, inner most larger, ca 1 mm long; petals 6, smaller than the inner most sepals, ca 0.5 mm long, oblanceolate. Female flowers: sepals and petals like male flowers, staminodes 6, linear, carpels 3, ovoid. Drupes subglobose, 4-5 mm diam., purple or red, 2 compressed, echinate; surface concave with double row of projections around the edge.

Fl. & Fr.: April-September.

In evergreen, primary and secondary forests. Lungleh, 99 m, Gage 58 (CAL); Aizawl protected forest, 1050 m, Deb 33224; Kolasib, K.P. Singh 93153; near Sherchip, K.P. Singh 96619; Jowbak, K.P. Singh 96739; Aizawl, M. Sowmliana 95587.

5. PYCNARRHENA Miers ex Hook. f. & Thomson.


Climbing shrubs. Leaves elliptic or oblong-lanceolate, 13-20 x 7-9 cm, base rounded or cuneate, obtusely acuminate at apex, entire along margins, coriaceous, glabrous; petioles 1-2 cm long, puberulous, top clavate. Flowers axillary, fascicled. Male flowers: sepals in whorls, ca 2 mm long, outer ciliolate; inner obovate, glabrous; petals 4-5, small lobed, ca 1 mm long; stamens 6-10, sessile. Female flowers unknown or much smaller; staminodes 6. Drupes up to 10 mm long, wrinkled, glabrous; seeds ellipsoid.

Fl. & Fr.: February-June.

Changsc, Prazer 1890, s.n.wm. (CAL).
6. **Stephania** Lour.

1a. Leaves broadly ovate or suborbiculate, lobed or obscurely toothed along margins.

2a. Leaf margin ± lobed; sepals glandular-papillosa; petals glandular

   ...3. *S. glandulifera*

2b. Leaf margin obscurely toothed; sepals not glandular; petals glandular in middle

   ...2. *S. glabra*

1b. Leaves deltoid, entire along margins:

3a. Leaves elongate-deltoid; umbels 3-4-rayed.

   long peduncled

   ...1. *S. elegans*

3b. Leaves ovate-deltoid; umbels 6-7-rayed, capitale

   ...4. *S. japonica*


Small twiners. Leaves narrowly deltoid, 5-10 x 3-5 cm, base truncate, acute at apex, entire along margins, glabrous, pale beneath, coriaceous; petioles 3-4 cm long. Flowers in cymose umbels, purple or greenish; peduncles 4-5 cm long, axillary. Male flowers: sepals obovate, ca 2 mm long; petals obovate, fleshy, glabrous. Female flowers same as male. Drupes 6-8 x 4-5 mm, red, obovoid, glabrous; endocarp tubercled on periphery, transversely ribbed.

*Fl. & Fr.*: September-April

Chimuttupui, Saiha-Bualpui, *Dutra* 33854 (CAL).


Twiners. Leaves broadly ovate, 5-12 x 4-11 cm, base rounded, acute or usually mucronate at apex, usually entire along margins, glabrous; petioles 10-15 cm long. Flowers in axillary umbels, peduncles 5-6 cm long.
Male flowers: sepals 6, whorled, ca 2 mm long; outer ones narrow-oblong; inner ones obovate-oblong; petals 3, 1.5-2 mm long, cuneate, glandular. Female flowers: sepals and petals same as that of male flowers; carpels ovoid. Drupes ovoid, 5-7 x ca 5 mm, reddish; endocarp surface with 2 rows of peg-like projections around the edge.

Fl. & Fr.: May-October.

Hnathial, K.P. Singh 94140; Ruallung, M. Sawmliana 95536.


Climbers with fleshy branches. Leaves orbicular or broadly ovate, peltate, 8-12 cm across, base rounded, obtuse or mucronate at apex, lobed along margins, glabrous; petioles 8-10 cm long. Flowers yellowish, ca 5 mm across, borne in umbels on leafless branches; peduncles 3-4 cm long, axillary. Male flowers: sepals puberulous, glandular-papilllose near apex; petals orbicular, shorter, eglandular. Female flowers: ovary ovoid. Drupes suborbicular, 5-8 x 5-6 mm, compressed, reddish when ripe; endocarp horse shoe shaped with two rows of peg-like processes around the edge.

Fl. & Fr.: November-May.

Near Fort Lungleh, Gage 217 (CAL); Mizø hills, Dutta 33546, 33563.


Large twiner; branchlets glabrous. Leaves deltoid, broadly ovate, 7-9 x 4-7 cm, base rounded, acuminate at apex, entire along margins, membranous; glabrous above; sometimes sparsely pubescent beneath particularly on nerves; petioles 3-5 cm long, puberulous. Flowers in axillary, capitate umbels, whitish or greenish-yellow; peduncles 4-5 cm long. Male
flowers ± sessile in capitate clusters, yellow or white; sepals 6–8, ca 1.5 x 0.5 mm, obovate; petals 3–5, ca 1 mm long, fleshy; stamens 6 or 8. Female flowers similar to males; carpels solitary, ovoid. Drupes ± globose, 4–7 x 4–6 mm, red when ripe, glabrous; surface with 2 rows of peg-like projections.

Fl. & Fr.: April–December.

Kawnpui-Hartawki road, K.P. Singh 93217. Gangopadhyay (l.c.) reported two varieties under the species. The above plant belongs to var. *discolor* (Blume) Forman

7. **Tinospora** Miers

1a. Leaves glabrous; fruit surface tubercled

1b. Leaves pubescent; fruit surface rough and warty

...1. *T. cordifolia*

...2. *T. sinensis*


An extensive climber with succulent stems, up to 10 m high. Leaves broadly ovate-cordate, 7–10 x 5–9 cm, base sinuate, shortly acuminate at apex, glabrous; petioles 3–6 cm long, pubescent. Flowers axillary or on leafless branches, 8–15 cm long, greenish-yellow, glabrous. Male flowers in few-flowered clusters, sepals in two whorls of 3 each, outer sepals ca 1 mm long, inner elliptic, 3–4 mm long; petals 6, 3 mm long, obovate; stamens 6, free, club shaped; anthers oblong. Female flowers solitary along axis, bracteate; bracts boat shaped; staminodes 6; carpels 3, ellipsoid. Drupes globose-ellipsoid, 5–6 mm long, red, rounded at both ends, papilllose on surface.

Fl. & Fr.: February–April.

Jawbuk, K.P. Singh 94238.

A large, fleshy climber. Leaves broadly ovate, 8-11 x 7-10 cm, base cordate but abruptly truncate, shortly acute at apex, entire along margins, membranous, pubescent above and whitish tomentose below; petioles 4-6 cm long. Flowers green on racemes; racemes 5-10 cm long. Male flowers: sepals in 2 whorls of 3 each; inner ones ca 1.5 mm long; outer ones 2-4 x 2-4 mm, elliptic; petals 6, rhomboid, 2-4 x 1-3 mm; stamens ca 2 mm long. Female flowers: carpels ca 2 mm long. Drupes 1-3, 8-10 mm across, globose, bright red, ± keeled at apex, pointed at base, rough and warted.

*Fl. & Fr.:* February-April.

New Aizawl, Deb 3428.

**BERBERIDACEAE**

(K.P. Singh)

**MAHONIA** Nutt.

1a. Racemes 12-20 cm long; bracts longer than pedicels

...1. *M. borealis* var. *parryii*

1b. Racemes 10-12 cm long;

bracts shorter than pedicels or equal

...2. *M. pycnostachya*


Shrubs. Leaves oblong-oblancoate; leaflets 5-9 pairs, usually separate, lower most pair very small, 5-10 x 1.5-2 cm, base obliquely truncate or rounded-cuneate; spinose-dentate along margins, smooth above, dull beneath, basal nerves 5. Flowers fascicled in dense racemes; racemes 12-20 cm long; pedicels 3-4 mm long; bracts 3-5 mm long; outer sepals 5-6 mm long, ovate; inner sepals ca 8 mm long, oblong-obovate; petals 5-6 mm long, oblong; stamens apiculate. Berries 5-8 mm long, globose, blue-black, hairy.
Fl. & Fr.: February-April.

North Vanlaiaphai 1500 m, Parry 149 (fide C.E.C. Fischer, l.c.); Phongpui 1800 m, Parry 149a (fide C.E.C. Fischer, l.c.). Endemic.

Endemic.

Notes: A yellow dye is made from the sap.


Fig. 12.

Erect shrubs or small trees, up to 2m tall. Leaves 25-40 cm long, sheathed at base; leaflets 5-6 pairs, mostly contiguous, 3 13 x 3 4.5 cm, ovate, ovate-oblong, base obliquely truncate or rounded, acuminate or acute at apex, coarsely spinose-dentate with 3-5 large spinous teeth on either side along the margins, sessile, glabrous; basal nerves 3-5. Flowers fascicled in dense racemes, 0.5-0.7 cm diam., yellow; racemes 7-12 cm long; bracts 1 2 mm long; pedicels 5 7 mm long, sepals 5 6 mm long, ovate; petals ca 5 mm long, elliptic-lanceolate. 2-lobed at apex; stigma capitulate. Berries 6-7 mm long, elliptic or globose, purplish when ripe; ovules 2.

Fl. & Fr.: October-January.

North Vanlaiaphai. Leslie 343. 354 (CAL); Deb 31106.

PAPAVERACEAE
(K.P. Singh)

ARGEMONE L.


Fig. 13.
Fig. 12: Mahonia pycnophylla (Fedde) Takeda
Fig. 13: Argemone mexicana L.
Erect, prickly, annual herbs, up to 1 m high, divergely branched with
bluish leaves and yellowish juice. Leaves elliptic-oblong, 3-20 x 2-8 cm,
bases cordate, sessile or semi-sessile, alternate, pinnatifid, sinuate-
lobate, acute, toothed with spines along the margins, prickly beneath,
glabrous above or sometimes both surfaces glabrous. Flowers 4-6 cm in
diameter, terminal, solitary, golden-yellow; sepals 2 or 3, c. 1.5 cm long,
e elliptic, prickly outside: petals 4 or 6, imbricate, obovate, 2-3 x 1.5-2.5
cm; Stamens many, c. 10 mm long, caducous. Capsules 1-3.5 x 0.5-1.5
cm, obovate, 4-6-ribbed, usually prickly, dehiscing along sutures by short
valves opposite each stigmatic lobe; seeds many, 1.5-2 mm long, deeply
reticulate, blackish-brown.

Fl. & Fr.: January-June.

Common on waste land throughout the state especially on banks of the
river in association with Xanthium species. Sairang, 660 m, Deb 30628.

Uses: The yellow juice is used medicinally. Seeds possess laxative
properties and as adulterants for mustard seeds.

FUMARIACEAE

(K.P. Singh)

CORYDALIS DC.

Botany 18: 532, ff. 22D & 23D, 1989; Ellis & Balak., in Sharma et al.,
Fl. India 2: 70. 1993. C. longipes auct. non DC.; C. sibirica auct. non
Kanjilal et al., Fl. Assam 1: 67. 1934.

A much branched, prostrate herb, 20-30 cm high. Leaves cauline, 1-
3 x 1-3 cm, deeply and equally lobed with ultimate segment obovate or
oblanceolate; lobules 2-3 mm broad, glabrous; petioles 2-5 cm long.
Racemes 3-10-flowered, terminal 5-8 cm long; bracts small, deeply toothed;
Flowers yellow, 5-10 mm long; pedicels 5-7 mm long; sepals 2, broadly
ovate, ca 1 mm long; petals yellow, tinged with purple, upper petal with
broad, often crenately toothed dorsal crest, decurrent along spur; spur 8-
10 mm long; lower petal with rounded swelling near base; ovary 1-celled.
Capsules 4-5 x 2-3 mm, obovoid with two rows of seeds, minutely papillose on surface; seeds ca 10, ca 1 mm across.

*Fl. & Fr.*: April-October.

Mizo hills, *Wenger* 21516.

**BRASSICACEAE**

*(K.P. Singh)*

1a. Seeds in 1-row:

2a. Flowers white; pods unbeaked or with conical style, linear, flat

... 2. *Cardamine*

2b. Flowers yellow; pods with slender beak, turgid

... 1. *Brassica*

1b. Seeds in 2-rows:

... 3. *Rapippa*

1. *BRASSICA* L.

1a. Upper leaves amplexicaulat at base, narrowed usually entire along the margins

... 2. *B. rapa* subsp. *campestris*

1b. Upper leaves not amplexicaulat at base, narrowed to the petiole, usually toothed along the margins

... 1. *B. juncea*


Annual herba, 1-2 m high; stems erect, branched. Basal leaves oblong lanceolate, 10-15 x 2-5 cm, lyrate, sinuate; upper leaves oblong-lanceolate or linear, narrowed and not amplexical at base, usually toothed along the margins. Flowers in corymbs, ca 6 mm across; sepals ca 5 mm long, oblong; petals 8-10 x ca 4 mm, obovate, bright yellow with pale green narrow claw. Pods (siliquas) torulose, 2.5-5 x 0.2-0.3 cm, bivalved with a narrow conical beak; seeds ca 10-20 in each locule, arranged in one row, 1-1.5 mm diam., globose-spherical, brown, reticulate.

*Fl. & Fr.*: September-January.
Sialsuk, Deb 30865 (CAL); South Varlaiaphai-Darzo, Dutta 34047 (CAL).

Uses: Seeds are used as source of oil.


Herbs with slender roots, 0.3-1 m high. Leaves rosette, green. Basal leaves 10-20 cm long, lyrate-pinnatifid, hirsute with a large terminal lobe and 1 or more pairs of lateral lobes; upper leaves oblong, base cordate, obtuse or acute at apex, entire along margins, glaucous, glabrous, amplexicaul. Flowers corymbose, yellow; petals 4, 7-8 x 4-5 mm, obovate. Pods 3-10 x 0.3-0.6 cm, beak 1-1.5 cm long; seeds in one row, globose, 1.5 mm across.

Fl. & Fr.: April-June.

Reported on the basis of C.E.C. Fischer (l.c.).


Pods broader, 7-8 mm wide, 3-4-valved.

Sairang, 680 m, Deb 30603 (CAL); Sialsuk, Deb 30864 (CAL).

**2. CARDAMINE L.**

1a. Stems erect, usually not branched from below; leaflets 5-11 pairs, hairy on upper surface

2. **C. hirsuta**

1b. Stems flexuose with many branches from below; leaflets 2-4 pairs, glabrous on upper surface

1. **C. flexuosa**

Annuals or biennials, 10-30 cm high, simple, flexuose. Leaves pinnate or deeply pinnatisect; basal leaves 7-12, orbicular; stem leaves 4-10, ovate to lanceolate, 3-4.5 cm long; lateral leaflets 2-4 pairs. 2.5-7 × 2-5 mm. ovate elliptic, obtuse or subacute at apex, entire or sinuate along margins, glabrous; terminal leaflet 0.8-1 × 0.7-1 cm. obovate, sometimes 3-4-lobed. Flowers ca 3 mm across, few to many, in 2-12 cm long racemes; sepals oblong-elliptic; petals 2-3 mm long, white; stamens 4 or 6 with 2 outer staminodes. Pods 10-18 × 0.5-1 mm, elliptic-oblong, obtuse; seeds ovoid, yellow.

Fl. & Fr.: January-July.

Scarce on rocks, Theiriat, Deb 31340.


Annual herbs, ± straight, glabrous. 15-40 cm high; stems simple. Leaves pinnate or pinnatisect, variable, 5-8 cm long; leaflets 5-11, variable in size and shape, 8-14 × 3-11 mm. orbicular to ovate or elliptic, entire or lobulate along margins; basal leaves forming a rosette, hairy on upper surface; stem leaves 2-4, smaller than basal leaves; petioles 1-2.5 cm long. Flowers 1.2-2 cm across, white, in terminal racemes; sepals ca 2 mm long, elliptic, small; petals 3-5 mm long, clawed, obovate-cuneate, sometimes absent; stamens usually 4. Pods linear, 10-20 × ca 1 mm, flat, not beaked; seeds 8-16 per valve, ± 1 mm diam., ellipsoid, smooth.

Fl. & Fr.: January October.

Darzo, Parry 586 (fide C.E.C. Fischer, l.c.).
Fig. 14: Cardamine hirsuta L.
3. RORIPPA Scop.


An annual weed, 20-30 cm high, hairy; stem simple or branching from below. Leaves variously lobed, 3-8 x 1-2.5 cm, base auriculate-amplexicaul, margin acutely toothed; lateral segments oblong-elliptic; terminal segments ovate, obtuse. Racemes bracteate with yellow, bracteate flowers; bracts leaf like, 5-20 mm long, entire or minutely toothed; pedicels 3-7 mm long. Pods narrowly oblong; 5-15 x 1-1.5 mm, seeds many, small, in 2 rows.

Fl. & Fr.: February-May.

Between Ridge camp and Lungsin, 750 m, Gage 215 (CAL).

CULTIVATED TAXA


**CAPPARACEAE**

*(K.P. Singh)*

1a. Herbs with elongated non baccate fruits

1b. Shrubs or scandent shrubs or trees with baccate fruits:

2a. Trees with palmately trifoliate leaves; stamens 4-6; fruits many seeded berry

2b. Shrubs or scandent shrubs with simple leaves, stamens many; fruits berry or a drupe:

3a. Sepals and petals 4; gynophore elongated; fruits many-seeded berry

3b. Sepals 6; petals absent; gynophore very short; fruits 1-seeded drupe

1. **CAPPARIS** L.

1a. Flowers in panicked corymbs, never in supra-axillary vertical series

1b. Flowers in supra-axillary vertical series of 2-10:

2a. Flowers numerous, arranged in many rows of 7-10 flowers on leafless shoots

2b. Flowers 1-few, arranged in axillary rows of 2-4 flowers on leafy shoots:

3a. Shoots unarmed:

4a. Shoots glabrous; lateral nerves more than 7 pairs; fruits 2-seeded

4b. Shoots tomentose; lateral nerves less than 7 pairs; fruits many-seeded

3b. Shoots usually armed:

5a. Branchlets glabrous; leaves membranous, cataphylls absent; fruits not beaked

5b. Branchlets pubescent; leaves coriaceous, cataphylls present at least at base; fruits beaked

Shrubs or sometimes climbers, up to 10 m tall, glabrous; stipular thorns usually minute or absent, ca 1 mm long. Leaves elliptic to oblong-lanceolate, 6.5-8 x 3.5-4 cm, base rounded or tapering, long acuminate at apex, glabrous; lateral nerves 7-8 pairs; petioles 4-5 mm long, channelled. Flowers axillary, 1-1.5 cm across, fragrant, solitary or 2-4 in vertical supra-axillary rows, white; sepals obovate, glabrous except along the margins, greenish-white; petals tomentose inside, glabrous outside; stamens 20-25; gynophore up to 4 cm in fruit, filiform. Fruits ca 1.5 cm diam., globose or pear shaped; seeds 2. ca 5 x 3.5 mm.

*Fl. & Fr.:* April-October.

In open thickets. North Lushai hills, Kulikawn, Godfrey 462 (CAL).


Shrubs, sometimes scandent, 3-5 m high; innovations (shoots) minutely light brown, tomentose, but later glabrescent, unarmed. Leaves ovate or elliptic, 5.5-10.5 x 3.5-4 cm, base cuneate or rounded, abruptly acuminate or acute at apex, subcoriaceous, widest at or below the middle, glabrous, but main nerves tomentose for a long period; lateral nerves 5+ pairs; petioles 6-7 mm long. Flowers 2-6 in vertical rows at or above leaf axils, 1.2-1.5 cm across, white with green striations and purple spots, fragrant; sepals broadly elliptic, 5-6 mm long, outside tomentose; margins ciliate; petals densely tomentose, 6-10 x 2-3 mm, obovate; stamens 28-30; gynophore filiform, 2-3 cm long. Fruits 1-1.5 cm diam., subglobose, dark-coloured, pulp yellow, many seeded; seeds ca 7 x 6 mm.

*Fl. & Fr.:* April-September.

In thickets, on dry and moist, sandy or loamy soil. Chiappui, 1500 m, Parry 211 (fide C.E.C. Fischer, i.e.).

Scandent armed shrubs, 3-18 m high; young shoots puberulous, terete and glabrescent when older; stipular thorns small, recurved, 2-5 mm long in older branchlets. Leaves elliptic or oblong-lanceolate, 6-10 x 2.5-3.5 cm. base rounded or cuneate, acuminate at apex, subcoriaceous, glabrous above, puberulous beneath but soon glabrescent; lateral nerves inconspicuous, 6-9 pairs; petioles 5-6(8) mm long, puberulous, channelled. Corymbs axillary to uppermost leaves, forming terminal panicles; panicles 15-18 cm long; bracts subulate, 1-2 mm long, caducous. Flowers fragrant, white, 1.2-1.5 cm across; sepals suborbicular, puberulous, 4-7 mm long; petals 5-6 x 2-4 mm, oblong, pubescent; stamens 18-32; gynophore 4-12 mm long, glabrous. Fruits 0.8-1.5 x ca 0.8 cm in diam., subglobose, oblong or ellipsoid, pointed at both ends, glabrous, reddish, 1-seeded or few; seeds brown, 8-10 mm long, globular.

*Fl. & Fr.*: February-November.

Aizawl, *Goafrey* 526 (CAL); Kheitum, *Deb* 31207.


Erect shrubs or trees, 2-5 m tall; branchlets glabrous; stipular thorns short, ca 1 mm long, straight, sometimes absent. Leaves elliptic-oblong, or oblanceolate, 10-26 x 4-8 cm, base cuneate, abruptly acuminate at apex, membranous, glabrous; lateral nerves 6-10 pairs, petioles 8-10 mm long. Flowers 4-6 mm across, arranged in supra axillary vertical rows of 6-10 flowers, white, sweet-scented; sepals ovate, 3-5 mm long, glabrous; petals 5-6 x 3-4 mm, broadly elliptic, glabrous; stamens 10-12; gynophore 5-10 mm long. Fruits globose, 8-10 mm across, 1-3 in a row, glabrous, reddish-purple, turning black; seeds 1-3, 6 x ca 4 mm.

*Fl. & Fr.*: February-December.
Fig. 15: Capparis cantoniensis Lour.
In moist subtropical forests. Recorded on the basis of Raghavan (i.c.).


Erect shrubs or small trees, up to 5 m tall; young branches tomentose; stipular thorns 5-6 mm long, straight, pointing upwards. Leaves ovate-lanceolate, 5-15 x 3-6 cm, globose, base rounded or subacute, acute to acuminate at apex, chartaceous, glabrous; lateral nerves 5-8 pairs; petioles 5-6 mm long. Flowers 3-4 cm across, in axillary or extra-axillary rows of 2-3 flowers, white; sepals 6-9 mm long, densely tomentose, ciliate; petals 1.4-2 cm long, obovate-oblong or oblanceolate, pubescent, inner pair with purple or yellow blotch; stamens 32-38; gynophore 2.5-3.5 cm long. Fruits 0.8-1.5 cm across, globose, red, apically beaked, glabrous; seeds 1, globose, 4-5 mm diam., brown.

Fl. & Fr.: March-February.

In grassy places in subtropical areas. Recorded on the basis of Raghavan (i.c.).


Straggling shrubs, up to 3 m high; shoots glabrous; stipular thorns pointed, strongly recurved, 3-4 mm long, in pairs at the base of each leaf, whitish. Leaves ovate-elliptic, 4-8 x 2-4 cm, base rounded, caudate-acuminate at apex, glabrous; lateral nerves 4-5 pairs; petioles 4-6 mm long. Flowers 5-10 mm across, white, fragrant, 1-5 in supra-axillary vertical rows; sepals broadly elliptic, 1-6 x ca 3 mm, tomentose along edges; petals oblong, tomentose; stamens 8-18; gynophore 15-20 mm long, glabrous; ovary red, glabrous, pear shaped. Fruits 0.8-1 cm diam., pisiiform or subglobular, deep orange or red when ripe; seeds 3-4, ca 5 x 4 mm.

Fl. & Fr.: March-June.

Recorded on the basis of C.E.C. Fischer (i.c.).
2. **Cleome** L.

1a. Plants pubescent with gland-tipped hairs, foliage; petals white or yellow; androphore 15-25 mm long

1b. Plants glabrous, eglandular, not foliaceous; petals pinkish or reddish violet; androphore 5-9 mm long

...1. *C. gynandra*

...2. *C. speciosa*


Annual, erect herbs, up to 1 m high, strongly smelling, glandular-pubescent. Leaves 4-6 cm long, 3-5-foliolate; leaflets unequal, middle pair largest, 2-6 x 1.5-2.5 cm; laterals 1-3 x 0.5-1.5 cm, obovate-elliptic, oblanceolate or rhombate, base cuneate, acute at apex, entire to dentate along margins, chartaceous, glandular-pubescent beneath; petioles 2-12 cm long; petiolules up to 3 mm long, webbed. Racemes lax, many-flowered, corymbose, terminal, 10-25 cm long; flowers 1-2.5 cm across, white or creamy-yellow; sepals ovate, 2-5 mm long, caducous; petals obvate, 4-16 x 2-6 mm long, narrowly clawed at base; androphore 15-25 mm long; stamens 6, purple; gynophore up to 1.5 cm long, later elongating to 3.5 cm in fruits. Capsules 2-8 x 0.5-0.6 cm, erecto-patent or compressed, terete, striate; seeds 15-40, reniform, brown or black.

*Fl. & Fr.*: Throughout the year, chiefly August-September.

Common weed in abandoned Jhum land and other waste places. Aizawl, Deb 50559; Lunglei-Sairem, Dutta 33494, 33495 (CAL).


Erect herbs, up to 1.5 m high, whitish, glabrous. Leaves 3-7-foliolate; petioles 4-12 cm long; leaflets ovate-lanceolate, elliptic-lanceolate, 8-13 x 1.5-4 cm, base narrowed, acuminate at apex, chartaceous, glabrous; lateral nerves 7-20 pairs; flowers 2.5 cm across, on racemes, subtended by subsessile leafy bracts; sepals subulate, 3-5 mm long, puberulous; petals
Fig. 16: Cleome speciosa Raf.
lanceolate, 2-4 cm long, pinkish or rosy-purple; androphore 5-9 mm long; stamens 6; gynophore 4-6 cm long, later elongating to 9 cm in fruit. Capsules linear, pendent, 6-10 x c 0.3 cm, striate; seeds many, horse-shoe shaped, brown, 2-3.5 mm across.

Fl. & Fr.: April-October

Usually cultivated in Kitchen gardens for its showy flowers. Sairang, Godfrey 429 (CAL); Hnathial, K.P. Singh 94133.

3. CRATEVA L.


Trees, 3-15 m tall, young shoots brown, branchlets mostly hollow. Leaves thinly membranous, 3-foliolate; petioles 4-10 cm long; leaflets lanceolate or elliptic, 5.5-12 x 3.5-6.5 cm, base cuneate, abruptly acuminate at apex, middle leaflets largest, lateral leaflets oblique, glabrous; lateral nerves 8-12 pairs; petiolules 4-5 mm long. Flowers 3-4 cm across, in terminal corymbose up to 25-flowered racemes; sepals 6-8 mm long, narrowly lanceolate; petals ovate-elliptic, white turning creamy, sometimes orange, clawed; claw 6-18 mm long; stamens 16-24, on androphore, dark red or purplish, 3-7 cm long; gynophore 4-5 cm long and later enlarging to 12 cm long in fruiting; ovary subglobose. Fruits obovoid-subglobose, 4.0-5.5 cm in diam., fleshy, many-seeded; seeds ellipsoid, 14-15 x 10-12 mm, compressed, tuberculate.

Fl. & Fr.: April-December

Scarce, in subtropical evergreen forests. South Lushai Hills, Wenger C 1, (CAL); Mizo hills, Dutta 33565 (CAL).

4. STIXIS Lour.


Large, woody climbers, 2-15 m high with dotted white branchlets. Leaves simple, oblong or oblong-lanceolate, 12-24 x 4-11 cm, base cuneate, abruptly acuminate at apex, glabrous, shining above, pale beneath, minutely punctate with raised white dots on both surfaces; lateral nerves 6-9 pairs, prominent; petioles 1-1.5 cm long, pubescent. Inflorescence axillary or supra-axillary, racemes or terminal panicles, 10-20 cm long; bracts linear to ovate-acute, caducous; flowers white, ca 1.5 cm across; sepals ovate-elliptic, 4-5 x ca 2 mm, olive green, pubescent; petals absent; androgynophore ca 2 mm long, glabrous; stamens 38-52; gynophore puberulous, 2-6 mm long, enlarging in fruit. Drupes ellipsoid or obovoid, 2-5 x 1.5-3 cm, fleshy, brown-orange when ripe, 1-seeded; surface covered with flat whitish warts, 3-valved; seeds ovoid, 1.5-2 x ca 1 cm.

Fl. & Fr.: April-November.

Common in mixed tropical and subtropical evergreen forests. Near Lungleh fort, 900 m, Gage 41, 77 (CAL); Lawngtalai, Dutta 33764 (CAL); Phairuam, K. P. Singh 94199; Chalfilu, K. P. Singh 96998; Kawnpui, K. P. Singh 97017, 97040; Ranu, K. P. Singh 97105.

Note: As per the state forest department records, Crataeva magna (Lour.) DC. also occurs in the state.

VIOLACEAE
(K. P. Singh)

VIOLA L.

1a. Plants without subterranean stems or stolons; stipules adnate to petioles; leaves triangular-ovate or linear-lanceolate

1b. Plants with ascending or decumbent stolons; stipules free from petioles:

...1. V. betonicifolia ssp. betonicifolia
Fig. 17: Stixis suaveolens (Roxb.) Pierre
2a. Stipules entire; styles with two lateral patent lobes on the top ... 3. *V. hamiltoniana*

2b. Stipules flabellate; styles without lateral patent lobes:

3a. Peduncles bi-bracteolate above the middle ... 4. *V. thomsonii*

3b. Peduncles bi-bracteolate below the middle:

4a. Leaves broadly canescent, obtuse; flower pale violet ... 2. *V. canescens*

4b. Leaves pilose, deltoid, acuminate; flowers white to bluish ... 5. *V. pilosa*


Herbs with perennial rootstock; stems absent. Leaves linear-lanceolate, sometimes triangular-ovate, 2-6 x 0.5-3 cm, base truncate or shallowly cordate, obtuse to subacuminate at apex, crenate or serrate along margins, glabrous to ± pubescent; petioles 3-8 cm long, winged above; stipules ovate-lanceolate, 5-8 mm long, sparingly short-flabellate. Flowers 4-7 mm across, lilac, on 5-15 cm long peduncles; peduncles bi-bracteolate at middle, glabrous; petals up to 1 cm long; spur 2-5 mm long. Capsules ca 8 mm in diam., oblong, glabrous.

*Fl. & Fr.*: February-June, often throughout the year.

Phonphu, 1800 m, *Parry 224*, (fide C.E.C. Fischer, l.c.); Lushai hills, *Parry 6* (CAL); Champhai, 170 m, *Deb 30970*; Theiriat, *Deb 31279*; Taitaw, 600-914 m, *Dutta 33219*; Thalthlang, *Dutta 33945*; Sairep, K.P. Singh 94126.

Herbs, prostrate; stems often with runners. Leaves ovate-cordate to subreniform, 1-4 x 1.5-4 cm, obtuse, serrate-crenate along margins, 5-7-nerved beneath; petioles 3-8 cm long, pubescent; stipules up to 1 cm long, subulate, lanceolate. Flowers ca 1.5 cm across, pale-violet; bi-bracteolate; peduncles 7-10 cm long; sepals 5-7-nerved, pubescent; petals up to 1.5 cm long, obovate-oblong, lowermost spurred; style with truncate stigma. Capsules 3-4 mm in diam., pubescent, subglobose, many-seeded.

Fl. & Fr.: March-October.

S. loc., Lorrain s.n. (fide C.E.C. Fischer, l.c).


Perennial herbs: stems slender, ascending or trailing, up to 25 cm long. Leaves 1-3.5 x 1.5-3.5 cm, ovate to reniform-cordate or deltoid; basal sinus broad, obtuse to acute at apex, crenate-serrate along margins, glabrous to hirsute; petioles 3-5 cm long, glabrous; stipules ca 1 cm long, subentire. Flowers solitary, ca 1 cm across, white to light violet; peduncles 1-6 cm long, bi-bracteolate above middle; sepals 4-5 mm long, lanceolate, acute; petals obovate, supur saccate; style straight. Capsules ellipsoid-oblong, ca 1 cm long, glabrous, many-seeded.

Fl. & Fr.: April-June, often throughout the year.

Phongpui, 1800 m, Parry 4, (fide C.E.C. Fischer, l.c); Blue Mountain, 1650-2100 m, Wenger 434, (fide C.E.C. Fischer, l.c).


Fig. 18.
Fig. 18: Viola pilosa Blume
Herbs with usually long, ± prostrate stolons. Leaves ovate to deltoid, 2.5-6 x 1-3.2 cm, base shallowly cordate, serrate along margins, hirsute or pilose to glabrous; petioles 5-6 cm long, pubescent; stipules ovate, acuminate, toothed or fimbriate. Flowers white to bluish; on 3-7 cm long, pilose peduncles, sepals lanceolate-lanceolate, canescent, 3-6 mm long; petals 1-2 cm long, obovate; spur sacate; style trumpet shaped; stigma crooked. Capsules 4-5 mm in diam., ellipsoid-globose, glabrous, few-seeded.

Fl. & Fr.: February-July, often throughout the year.

Vanajoh kupleyas, Zolse. Leslie 291 (CAL).


Herbs; stolons up to 20 cm long. Leaves ovate-cordate, 1.5-5 x 1.5-3.5 cm, acute at apex, serrate-crenate along margins, ± glabrous; petioles 8-10 cm long; stipules lanceolate, deeply fimbriate. Flowers ca 1.5 cm long, pale violet; on 8-12 cm long peduncles; bracteoles linear, acuminate with few teeth along the margins; sepals lanceolate, ca 5 mm long, acute; petals ovate-oblong, ca 12 mm long; lower petal spurred; style shortly beaked, geniculate at base. Capsules ± 8 mm long, oblong, apiculate.

Fl. & Fr.: March-September, often throughout the year.

Saiha-Bupalpui, Dura 33851.

BIXACEAE

(K.P. Singh)

BIXA L.


Shrubs or small trees, 5-8 m tall. Leaves ovate, 7-18 x 4-10 cm, base cordate to truncate, acuminate at apex, glossy glabrous above, densely
red dotted beneath; lateral nerves 4-5 pairs; petioles 4-8 cm long; stipules 5-6 mm long, acute. Flowers in terminal corymbose panicles, 3.5-5 cm across, white or pinkish; sepals broadly ovate, purple, scaly; petals 5-7, unequal, 2-3 cm long, pink to white. Capsules ovoid, 2.3 x 2.3-3.5 cm, densely covered with greenish brown bristles, loculicidally bivalved, green when young, brownish with age; seeds ca 5 mm long, many, obovoid, angular, orange-red.

_Fl. & Fr._: July-January.

Cultivated as an ornamental. Saitul, 900 m. _Parry_ 317, (fide C.E.C. Fischer, _l.c._).

Uses: Seeds give a dye used to colour butter, other food items, silk and hands. Fibre is used for making ropes. Bark is used for medicinal properties.

**FLACOURTIACEAE**

_(K.P. Singh)_

1a. Petals absent:

2a. Anthers dorsifixed; ovary imperfectly (2) 3-5-locular; styles 3 or more

...1. _Flacouria_

2b. Anthers basifixed; ovary 1-locular; stylo simple

...5. _Xylonia_

1b. Petals present:

3a. Flowers bissexual, in racemes, spikes or panicles; petals without a scale at base inside; stamens as many as petals; fruit a dry pule

...3. _Homalium_

3b. Flowers unisexual, in fascicles or cymes; petals with a scale at base inside; stamens many; fruit a berry with hard rind:

4a. Petioles geniculate at upper end; sepals free; fruits borne usually on branches

...4. _Hydoecarpus_

4b. Petioles not geniculate; sepals connate, fruits borne on the short trunk

...2. _Gynocardia_
1. Flacourtia L.


Middle sized trees, up to 15 m tall. Leaves pinkish or light cinnamon brown when young, ovate-lanceolate, 4-9.5 x 2.5-4.5 cm, base cuneate, obtusely acuminate at apex, serrulate-crenate along margins, glabrous above, minutely puberulous along midrib beneath; petioles 4-5 mm long. Flowers in axillary, subcorymbous racemes, 5-6 mm across, greenish yellow or white, fragrant; sepals 4(5), broadly ovate, ca 2 mm long. Male flowers: stamens many. Female flowers: ovary subglobose; styles 4-6. Berries 1-2.5 cm in diam., globose, dark purple when ripe, crowned by the persistent column of styles with 4-6 minute stigma points; seeds many.

Fl. & Fr.: March-October.

Lawngtalai, Dutta 33786 (CAL).

Uses: Fruits are edible.

2. Gynocardia R. Br.


Evergreen large trees, 10-30 m tall with drooping branchlets. Leaves bifarious, oblong or oblong-lanceolate, 7.5-19.5 x 4-7.5 cm, base rounded or truncate, short acuminate at apex, entire but uneven along margins; glabrous; lateral nerves 5-8 pairs; petioles 1-2 cm long. Male flowers: 2-3.5 cm across, in few-flowered axillary fascicles or corymbose clusters on tubercles on stem and old branches or cauline; yellow, fragrant; calyx lobes 5, connate into a cupular calyx; petals 5, oblong, ca 15 mm long; stamens ca 100, silky. Female flowers: few on tubercles on stem and
older branches; sepals and petals larger in size than males. Berries 8-10 cm in diam., with 5 mm thick hard rind, depressed, globose, glabrous, rugose, greyish, borne on the trunk; seeds numerous, obovoid or oblong, 2-2.5 x 1-2 cm, immersed in pulp, compressed.

*Fl.* & *Fr.*: March-January.

Near Fort Lungleh, 900-1200 m, *Gage* 70, 178 (CAL).

*Uses:* Wood is used for posts and planking. Fruit pulp is used for poisoning fish.

3. **HOMALIUM** Jacq.


Evergreen, tall trees, 8-28 m tall, young shoots glabrescent to grey hirsute. Leaves variable, elliptic-oblong or elliptic, base cuneate, 8-18 x 4-10 cm, bluntly acuminate at apex, coarsely to repando-crenate or subentire along margins, glabrous above, minutely hirsute along the nerves beneath; petioles 6-10 mm long. Racemes up to 35 cm long, axillary, pendulous; flowers in dense clusters, 2-5 mm across; hypanthium 1-2 mm long, faintly ribbed; sepals ca 2 mm long, petals ca 3 mm long, moderately to sparsely hirtellous outside; stamens one opposite each petal; ovary sparsely pubescent.

*Fl.* & *Fr.*: March-December.


4. **HYDNOCARPUS** Gaertn.


Evergreen trees, 10-20 m tall, with narrow crown and hanging branches. Leaves bifarious, variable, 10-20 x 4-6.5 cm, oblong or oblong-lanceolate, elliptic-oblong, base cuneate, obtusely short or abruptly acuminate at apex, entire along margins, glabrous; lateral nerves 7-9 pairs, oblique; petioles 2-4 cm long, swollen and slightly geniculate at upper end. Inflorescence in axillary cymes. Male flowers 8-12 mm across, pale yellow; sepals ovate-orbicular, ca 5 x 4 mm, fulvous, tomentose; petals ovate-orbicular, ca 4 mm long, white, pilose at apex; stamens 20-30. Female flowers 2-5 in a compact fascicles, sepals and petals less in number; staminodes 10-16; ovary villose. Berries globose, 5-8 cm across, stout beaked, velvety; pericarp reddish brown; seeds 12-18, 2-3 cm long, angular-ovoid.

*Fl. & Fr.*: July-February, probably throughout the year.

In evergreen forests. Aizwal. 900 m, Parry 677, (fide C.E.C. Fischer, l.c.); Aizwal. 900 m. G.K. Deka s.num.

*Uses*: Chalmugra oil from the seeds used for cutaneous complaints

5. *XYLOSMÆ G. Forst.*


*Fig. 19.*

Large shrubs or small trees, 5-10 m tall; stem with simple, short axillary thorns near base. Leaves elliptic-ovate or obovate-lanceolate, 8-16 x 3-6 cm, base attenuate, acuminate at apex, shallowly glandular-serrate along margins, thinly coriaceous, glabrous; lateral nerves 6-8 pairs, very oblique; petioles 5-10 mm long. Racemes axillary, paniculate, few-flowered, 2.5-4 cm long; flowers ca 4 mm across, dull white; sepals unequal ca 2 mm long, ± suborbicular, ciliate, silky inside. Male flowers: stamens 25-40. Female flowers: ovary sessile on disc. Berries globose-ellipsoid, 4-10 mm across, red when ripe with a persistent style, 2-8-seeded; seeds smooth, shiny.
Fig. 19: Xylosma controversum Clos
Fl. & Fr.: November-April.

In moist sub-tropical forests. Phongphui, K.P. Singh 96825.

PITTOSPORACEAE

(K.P. Singh)

PITTOSPORUM Banks ex Gaudin.

1a. Shrubs; flowers borne in simple racemes or corymbs; capsules obvoid or ellipsoid, 3-valved

... 2. P. podocarpum

1b. Trees; flowers borne in panicles or umbels; capsules globose, 2-valved

... 1. P. napaulense


Fig. 20.

Shrubs or small trees, up to 10 m tall. Leaves crowded at the end of branches, obovate-lanceolate, oblongate, elliptic or obovate. 7-15 x 2.5-4 cm, base cuneate, acuminate at apex, undulate or entire along margins, glabrous; lateral nerves 7-10 pairs. petioles 1-2 cm long. Flowers 6-8 mm long; in terminal or subterminal panicles of corymbs or umbels, yellow, sweet scented; sepals ca 2 mm long, ovate-oblong; petals 6-7 mm long, obovate; ovary hairy; style glabrous. Capsules globose, 5-7 mm diam., orange-yellow, crowned by the persistent style, 2-valved; valves horizontally striate inside; aril scarlet; seeds 4-8 per capsule, 3-4 mm long.

Fl. & Fr.: February-January.

Lungdeh, Helio hill, 1010 m, Gage 103 (CAL); Sairang, 1310 m, Deb 30742.

Fig. 20: Pittosporum napaulense (DC.) Rehder & Wilson

Erect shrubs, up to 3 m high with whorled branches. Leaves very variable in size and shape, oblong-lanceolate, linear-lanceolate, oblanceolate or oblate, obovate or elliptic, 0.3-18 x 2-3 cm, base cuneate, acute or acuminate at apex, revolute along margins, glabrous, coriaceous; petioles 2-10 mm long, channelled; lateral nerves faint. Flowers in subterminal short racemes or corymbs, 1-1.5 cm long, pale yellow; sepals glandular hairy, 2-3 mm long, ovate; petals clawed at base, 10-12 mm long, recurved; ovary globose, tomentose. Capsules obovoid or oblong-ellipsoid, 2-2.5 x ca 1.5 cm, 3-valved, striate inside with horizontal lines; aril orange-red; seeds compressed, reddish, ca 8 x 5 mm.

Fl. & Fr.: March-January.

Phongphui, 1800 m, Parry 145, (fide C.E.C. Fischer, l.c.).

POLYGALACEAE
(K.P. Singh)

1. Tall herbs or climbing shrubs; flowers pedicellate; sepals unequal in shape; two inner sepals much larger than the outer ones; stamens 4-8; seeds arillate

2. Polygada

1b. Low herbs; flowers sessile; sepals equal or subequal in shape and size; stamens 4-5; seeds wingless

2a. Saprophytic plants; leaves sealy, non-green; fruits enclosed by calyx

2b. Autoctrophic plants; leaves distinct, green; fruits not enclosed by calyx

3. Salomonia

1. EPIRIXANTHES Blume


Saprophytic, yellow-brown, annual herbs, 8-10 cm high. Leaves reduced to a few brown scales, 1.5-2 x ca 1 mm, sessile, ovate-lanceolate,
acuminate at apex. Spikes 2-5 cm long, many, terminal with mature fruits below and flowers above, conical; flowers densely arranged, ca 1 mm long, cream-yellow; sepals nearly equal, ca 0.5 mm long, ovate, petals 3, 1.5-2 mm long, yellowish, narrow; stamens 4-5; ovary sessile. Capsules 2-celled, ca 1 mm or less wide, broader than long, without cilia, membranous, ± compressed; seeds ± rounded, small, black with a appendiculate strophiole, glabrous.

*Fl. & Fr.*: December.


2. **POLYGALA L.**

1a. Herbs, less than 1 m high:

2a. Leaves linear-elliptic to lanceolate, acute at apex; inflorescence 4-8 cm long, lax flowered; also symmetric, obovate, obtuse at apex, petaloid; seeds without appendages

3. *P. persicariafolia*

2b. Leaves ovate-lanceolate; obtuse-mucronate at apex; inflorescence 0.5-4 cm long, dense flowered, also asymmetric, acute or mucronate at apex, not petaloid; seeds with 3 appendages

...2. *P. chinensis*

1b. Shrubs, 2 m or more high:

3a. Scandent or climbing shrubs; stems with projecting cicatrices of fallen leaves; racemes terminal, paniculate; flowers pink; anthers conical

...4. *P. tricholepha*

3b. Erect shrubs or small trees; stems smooth; racemes axillary or sub axillary; flowers yellow; anthers oblong

...1. *P. arillata*


Shrubs or small trees, up to 3 m high. Leaves elliptic or oblong-lanceolate, 7-14 x 3-5 cm, base rounded to narrowed, acuminate-mucronate at apex, glabrous, usually hairy along nerves; lateral nerves 6-10 pairs; petioles 5-10 mm long, Racemes 5-10 cm long, axillary, terminal
Fig. 21: Polygala arilliata Buch.-Ham. ex D.Don
or supra axillary, drooping; flowers 1-1.5 cm long, yellow to deep orange; bracts minute, deciduous; sepals unequal, hairy outside, outer 3 ovate-elliptic, 3-6 mm long; inner 2 winged, obovate, 10-12 x 5-6 mm; petals 3-lobed, 10-15 mm long, hairy inside; stamens 8. Capsules 8-13 x 12-14 mm, bicellul, broadly reniform, compressed, notched apically, fleshy, rugose, dull red, loculicidal; seeds 2, 4-8 mm in diam., brown-black, globose, bilobed, glabrous, strophiolate.

Fl. & Fr.: March-September


Much branched, erect or ascending, perennial herbs or undershrubs, 10-75 cm high with woody rootstock; branches with curled hairs. Leaves variable, ovate to elliptic-lanceolate, linear-lanceolate, 2.5-7 x 0.8-2.5 cm, base acute, obtuse-mucronate at apex, glabrous or sparsely hairy; petioles ca 2 mm long. Racemes 2-8-flowered, short, axillary or supra axillary; flowers 5-7 mm long, greenish-white with pink violet blotches; sepals persistent; outer sepals 2-3 mm long, unequal, ovate-lanceolate, ciliate along margins; lateral sepals winged, 6-7 mm long, oblong to elliptic, acute or mucronate at apex, subfalcate, herbaceous, broader near the base; petals 3-lobed; middle lobe 5-7 mm long, white with purple apex. Capsules 4-6 mm across, broader than long, suborbicular, notched at apex, margined, ciliate; seeds ellipsoid, black, white silky with 2 oblong membranous appendages and a short tooth.

Fl. & Fr.: April-November.

Very common in moist places. Aizawl, Deb 30650; Chumliang, Dutta 33339; South Vanlaiphai, Dutta 34050; Bualpui village, K.P. Singh 93830; Kheitum, K.P. Singh 93980; Hnathial, K.P. Singh 96911; Tuipui road, K.P. Singh 94030, 96937.
Fig. 22: Polygala chinensis L.
3. *Polygala persicariifolia* DC., Prodr. 1: 326. 1824, Bennett in Hook. f., Fl. Brit. India 1: 202. 1872 (as "persicariaefolia"); Banerjee in Sharma et al., Fl. India 2: 480. 1993. \[Fig. 23,\]  

Erect or decumbent, branched, slightly pubescent herbs, 15-65 cm high. Leaves alternate, ovate-oblong or linear-elliptic to lanceolate, 2.5 x 0.4-2 cm, base subacute or cuneate, acuminate or acute-mucronate at apex, glabrous, slightly pubescent or stigose on nerves beneath; basal leaves smaller; petioles short, ca 1 mm long. Racemes 4-8 cm long, lax flowered, terminal or extra axillary; flowers 3-5 mm long, light-purple with pink streaks; bracts subulate, ca 2 mm long, acute; sepals persistent, membranous; outer ones small, 2-3 mm long, puberulous on margins, subequal; lateral ones winged, 5-7 x 5 mm, petaloid, broad obovate or elliptic, obtuse; petals hairy inside; middle lobe ca 5 mm long, keeled; lateral lobes smaller, obliquely oblong. Capsules bicelled, elliptic, oblong-ovate, compressed, membranous, ca 5 x 4 mm, notched at apex, marginally winged, ciliate along margins; seeds ca 3 x 1.5 mm long, oblong-ellipsoidal, reddish black, villous without appendages.  

*Fl. & Fr.*: July-November.  

Common in grasslands and forest edges. Kawkhul to Hijaupui, K.P. Singh 94379.  


Climbing shrubs, up to 2 m high; stems with projecting cicatrices of fallen leaves. Leaves oblong-lanceolate or oblong-elliptic, 4.5 x 8.5 x 1.5-2.5 cm, base rounded, abruptly acuminate at apex, entire along margins, coriaceous, glabrous; petioles 4-6 mm long. Inflorescence in terminal, paniculate racemes or sometimes leaf opposite; racemes 5-7 cm long; flowers pink to pinkish purple, 1-1.5 cm long; sepals ciliolate; outer paired ones suborbicular, ca 4 mm long; outer solitary one gibbous 5-7 mm long; winged sepals elliptic, ca 6 mm long; petals 3, keeled and crested, ca 1 cm long; stamens united to a sheath; anthers conical; ovary bicelled, compressed. Capsules ovoid or elliptic, winged, 4-6 x 6-7 mm, glabrous, beaked, reddish-purple; seeds black, arillate, subglobose.  

*Fl. & Fr.*: August-October.
Fig. 23: Polygala persicariifolia DC.
Fig. 24: Polygala tricholepha Chodat
Scarce in the area. Tuivawl, M. Sawmtiana 99269.

J. SALOMONIA Lour.


Erect or ascending, much branched, slender, annual herbs, 10-20 cm high, glabrous. Leaves ovate-lanceolate, 0.6-2 x 0.5-1.5 cm, broadly rounded, base cuneate or truncate, obtuse or subacute at apex, glabrous, 3-5-nerved at base; petioles short, ca 2 mm long, winged; spikes 2-8 cm long, terminal, many, dense flowered; flowers 0.15-2 mm long, pinkish white; sepals 5, scaly, subulate, subequal. ca 1 mm long, linear; petals 3, connate at base into a cleft tube, equal or subequal, 1.5-2 mm long; stamens 4, monadelphous. Capsules ca 2 mm wide and 1 mm high, sessile, compressed, obovate, toothed along the margins; seeds ca 1 mm in diam., shiny red or black brown, estrophiolate.

Fl. & Fr.: August-November.

Common in sunny spots on grassy slopes. Aizawl, Godfrey 494 (CAL); Darzo, Dutta 34062; Near Buangpui village, K.P. Singh 93824; Kawlkhul Hliapui, K.P. Singh 94364; Puilo Basti forest. K.P. Singh 94464.

CARYOPHYLLACEAE
(K.P. Singh)

1a. Prostrate or suberect, spreading herbs; stipules present; petals notched or bispined below middle; capsules 3-valved

...2. Drymaria

1b. Climbing herbs; stipules absent; petals entire, shorter than sepals; capsules 4-valved

...1. Brachystemma

1. BRACHYSTEMMA D.Don

Fig. 25: Salomonia cantoniensis Lour.
Fig. 26: Brachystemma calycinum D. Don
Herbs, climbing on trees, up to 6 m high; stems quadrangular, or 2-pilose at apex. Leaves opposite, ovate-lanceolate, 2.5-6 x 0.8-2 cm, base cuneate or rounded, acuminate-mucronate at apex, obscurely crenulate along margins, glabrous to sparsely pubescent above; petioles 0.8-1.5 cm long, recurved and thickened. Flowers 1.2-1.5 cm wide, in axillary or terminal, 4-10 cm long panicles, white; pedicle branches minutely pubescent; sepals 5, oblanceolate or elliptic, 5-6 x 1.5-2 mm, ± scarious, pale yellowish; petals 5, elliptic-lanceolate, shorter than sepals 1.5-3.0 mm long; stamens 5. Capsules globose, 4-valved, 1 or few-seeded; seeds reniform, reticulate.

_Fl. & Fr._: December-April.

A monotypic genus grows on rocky ground or climbing and drooping from small trees in dense forests. Siatchang, 600 m, Parry 151, (fide C.E.C. Fischer, l.c.); Blue mountain, 1650 m, Wenger 428, (fide C.E.C. Fischer, l.c.); Sialsuk, 1320 m, Deb 30685; Tuiyang, J.H. Rama 60301.

2. **DRYMARRA Willd.** ex Schultes


_Fig. 27_

Prostrate or suberect, spreading, glabrous to glandular-papillate, branching herba, rooting at nodes. Leaves broadly ovate or orbicular or deltoid-ovate, 5-20 x 4-15 mm, base obtuse to cordate-rounded, acute or obtusely mucronate at apex, glabrous, 3-5-nerved; petioles 2-5 mm long; stipules bristly. Flowers in axillary and terminal cymes, white; pedicels glandular-papillose; sepals 5, 2-3 mm long, greenish, ovate, glandular-white, papillose on veins; petals 3-5, ca 2.5 mm long, bilobed to below the middle; stamens 2-3. Capsules ovoid, trigonous, 1.5-2.5 mm long, 2-3-valved to the base; seeds 1 or few, dark brown, orbicular, limly tuberculate.

_Fl. & Fr._: January-October.

Common on ground in moist shady places or near the streams. Aizawl, _Deb_ 30548; Kulasib-Blairavi road, _K.P. Singh_ 93200; Thanizawl forest.
Fig. 27: Drymaria diandra Blume
PORTULACACEAE

(K. P. Singh)

PORTULAČA L.


Sakawrekkak (Lushai); Tawdeggaw (Chakma).

Decumbent or prostrate, succulent, annual herbs, 15-45 cm high. Leaves fleshy, ovate or obovate, 1-2.5 x 0.5-1 cm, flat, subopposite, present below the flowers, base cuneate, rounded or obtuse at apex, entire along margins; petioles 2-5 mm long. Flowers solitary, or 2-6 in clusters or capituli with 2 involucral leaves surrounded by bracteoles and hairs; sepals 5-7 mm long, strongly keeled and joined in a tube, persistent and enclosing fruits; petals 4 or 5, 3-8 mm long, broadly obovate, yellow; stamens 7-10. Capsules ovoid, ca. 4 x 3 mm, straw-yellow; seeds 6-7 mm in diam., many black, tuberculate-punctate.

*Fl. & Fr.*: April-October.

Waste and cultivated places in foot hills. Tablbaugh, 150-200 m, K. P. Singh 94281.

HYPERICACEAE

(K. P. Singh)

1. *Cratoxyllum*

1a. Trees; leaves lacking black or translucent glands; capsules dehiscing loculicidally; seeds winged

1b. Herbs and shrubs; leaves with black or translucent glands; capsules dehiscing septicidally or along the placentae; seeds without wings

1. **Cratoxyllum** Blume


Trees, up to 20 m tall; branchlets glabrous. Leaves ovate-elliptic to ovate-lanceolate, 6-14 x 2-4 cm, cuneate at base, acuminate at apex, glabrous, grey underneath, sometimes waxy, almost sessile. Flowers in 2-3-flowered, axillary, cymeose panicles, pale-pink or bright or brick-red; sepals 5, obovate, 5-7 mm long, glabrous; petals 5, 5-7 mm long, gland dotted. Capsules obovate-ovoid, 6-10 x 3-4 mm, covered by sepals, 6-8-seeded, seeds 4-5 mm long, obovate.

Fl. & Fr.: June-March.

Rare in the dry upper mixed forests. Keitumkawa, 600 m, Party 294, (fide C.E.C. Fischer, l.c.); 600 m, Wenger s.lac., 316, (fide C.E.C. Fischer, l.c.).

2. HYPERICUM L.

1a. Shrubs

1b. Herbs:

2a. Stems quadrangular; bracts and sepals marginally not glandular-ciliate; stamens in 1 fascicile; ovary 1-locular, capsules smooth:

3a. Plants erect or prostrate; leaves subprostrate or spreading, elliptic-oblong; petals yellow, shorter than sepals; stamens 10-20

...3. H. japonicum

3b. Plants always erect; leaves closely appressed to stem, linear-oblong; petals purplish or deep orange, longer than sepals; stamens 30-50

...2. H. gramineum

2b. Stems terete, bracts and sepals marginally glandular-ciliate; stamens in 3 fasciciles; ovary 3 locular; capsules ribbed:

4a. Leaves lanceolate, acute; flowers 3-15 in terminal corymbose racemes; bracts densely glandular-ciliate; styles longer than ovary

...1. H. elodeoides

4b. Leaves broadly elliptic, obtuse; flowers solitary or up to 3 in terminal cymes; bracts ciliate; styles shorter or ± of same size as ovary

...4. H. monanthemum

Erect shrubs, usually unbranched, 15-60 cm high; stem terete, glabrous. Leaves variable, lanceolate or rarely ovate-lanceolate, 1.5-2.5 x 0.4-1.3 cm, base cordate-amplexicaul, often bristly glandular in upper leaves, acute to obtuse at apex; nerves prominent beneath, pellucid-punctate, with scattered, smaller, blackish marginal glands. Flowers 3-15, in terminal or subterminal corymbose cymes; bracts ciliate, glandular, lanceolate; flowers 1-2.5 cm across, yellow; sepals 6-7 x 1-1.5 mm with glandular-ciliate margins; petals oblongate 5-10 mm long, with a few black glands; stamens in 3 fascicles of ca 30 each; ovary 3-celled. Capsules ovoid, 4-6 x ca 4 mm, longitudinally ribbed; seeds oblong, ca 0.5 mm long, brownish-black, rounded at both ends.

Fl. & Fr.: June-October.

In open grassy ground and forest edges. Champhai, 1500 m, Parry 63, (fide C.E.C. Fischer, l.c.); Thaitlang, 1850 m, K.P. Singh 96847.


Bract herbs, up to 15 cm high; stem 4-lined, glabrous. Leaves closely appressed to the stem, sessile, ovate, linear-oblong, 4-6 x 1-3 mm, base cordate-amplexicaul to rounded, acute or obtuse at apex, pellucid gland dotted, 3-veined. Flowers in monoecious or dichasial cymes, terminal, 1-1.5 cm across; bracts linear-lanceolate; sepals subequal, free, narrowly elliptic, 3-6 mm long, with pellucid dots and lines, entire, acute; petals usually longer than sepals, 4-6 mm long, purplish or dark orange; stamens 30-50, 3-4 mm long, ovary ovoid to ellipsoid. Capsules cylindrical-ovoid, 3-6 x 1-3 mm, seeds oblong, ca 0.5 mm long, apiculate at one end.

Fl. & Fr.: June-October.

Scarce, in open grassy slopes. Zote, K.P. Singh 94572.
Fig. 28: Hypericum gramineum G. Forster

Annual herbs, 8-25 cm high; suberect or diffuse, sometimes prostrate with short branches, glabrous; stems quadrangular. Leaves opposite, sessile, suberect to spreading, elliptic-oblong or ovate, 5-8 x 2-6 mm, base rounded, subobtuse to obtuse at apex, pellucid dotted along margins, covered with black glands beneath, 3-nerved. Flowers 6-10 mm across, 1 to many in terminal, dichasial or monochasial cymes, yellow; sepals 5, elliptic-obovate, 4-6 x 1-2.5 mm, with pellucid black glands and lines along margins; petals 5, oblique, elliptic to obovate, 3-4 mm long, persistent, shorter than sepals; stamens 5-30, connate at base; ovary 1-celled. Capsules ovoid, smooth; seeds oblong, transversely ribbed.

*Fl.*: Almost throughout the year; *Fr.*: November-February.

On grassy slopes in open places. Champhai, 1500 m, Parry 62, (fide C.L.C. Fischer, i.c.); North Vanlaiphei, D.K. Singh 99212.


Perennial, erect, unbranched herbs, 15-25 cm high. Leaves sessile, 10-18 x 4-8 mm, elliptic to elliptic-oblong, base rounded to cuneate, obtuse at apex, entire along margins, minutely pellucid-punctate above, scattered or with a line of punctate black glands beneath. Flowers solitary or in 2-3 flowered terminal cymes, tetramerous, 1.5-2 cm across, red; bracts 6-7 mm long, elliptic-oblong, eciliate or sparsely ciliate, punctate with black glands; sepals elliptic, 4-6 mm long, glandular ciliate, streaked; petals obovate-oblanceolate 8-9 mm long; ovary ovoid; styles 3, ± equalling ovary. Capsules subglobose, 8-10 x 3.5-4 mm; seeds oblong, rounded at ends.

*Fl.* & *Fr.*: May-August.

Scarce, in grassy exposed slopes. Phongphu, K.P. Singh 96792.
Fig. 29: Hypericum japonicum Thumb. ex Murray
Fig. 30: Hypericum monanthemum Hook. f. & Thomson ex Dyer

Evergreen shrubs, up to 2 m high, glabrous. Leaves sessile, elliptic to ovate-lanceolate, 2.5-6.5 x 1.5-2.5 cm, base acute to cuneate or rounded, acute to obtuse at apex, glabrous above, glaucous and minutely glandular punctate on both surfaces. Flowers solitary or 3, in terminal corymbose cymes, 4-6 cm across, white, later yellowish, fragrant; sepals ovate, 8-12 x 2-4 mm. acute, entire; petals narrowly obovate, 1.5-2.5 x 1-1.4 cm, apiculate; stamens many, in 5 fascicles of ca 30 each, shorter than petals; ovary 5-celled, 5-8 mm long. Capsules ovoid to conical, 0.7-1.4 cm long, smooth; seeds many, ca 1 mm long, apiculate at ends.

*Fl.*: Throughout the year; *Fr.*: May–June.

North-Vanlaiphai. 1500 m, Parry 62 a. (*fide* C.E.C. Fischer, *l.c.*).

**CLUSIACEAE**

(K.P. Singh)

1a. Flowers unisexual; stigma sessile or subsessile; fruits baccate

1b. Flowers bisexual; stigma on elongated style; fruits drupaceous or capsular:

2a. Sepals 2; ovary 2-4-locular; fruit a drupe, pulpy

2b. Sepals 4; ovary 1-2-locular; fruit a capsule or a drupe, not pulpy

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**1. GARCINIA L.**

1a. Branches angular; flowers pentamermous

1b. Branches usually terete–weakly striate; flowers tetramerous:

2a. Leaves narrowly lanceolate or elliptic-lanceolate; petals shorter than sepals

2b. Leaves otherwise; petals longer than sepals:

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...1. *Garcinia*...  

...2. *Mommea*...  

...3. *Mesua*...  

...4. *G. lancealesfolia*...  

...6. *G. nanothrichum*...
3a. Lateral nerves more than 20 pairs, closely parallel
and not prominent

3b. Lateral nerves less than 15 pairs,
widely spaced, prominent beneath.

4a. Flowers sessile or subsessile, axillary, never terminal

4b. Flowers pedicillate, terminal or upper axillary:

5a. Leaves elliptic-lanceolate; male and female
flowers in terminal fascicles

5b. Leaves mostly obovate; male flowers in
terminal fascicles, female flowers solitary or
terminal racemose

6a. Branches spreading; stigma peltate, 10-lobed;
seeds enclosed in fleshy aril

6b. Branches decussate; stigma convex, entire;
seeds enclosed in pulpy aril


Trees, up to 20 m tall, with torect yellowish-brown branchlets. Leaves lanceolate or elliptic-oblong, 10-13 x 6-5.5 cm, base acute, acuminate to cuspidate at apex, coriaceous, glabrous; lateral nerves 10-15 pairs; petioles ca 1 cm long, channelled. Cymes axillary; flowers 4-5 mm across, solitary or fascicled, yellow; subsessile. Male flowers: sepals 4, orbicular, 1-2 mm; petals 4. 2-3 mm long; stamens ca 16, on short androphore; filaments confluent. Female flowers: ovary glabose, tetralocular. Berries globose, 2-2.5 x ca 2 cm, smooth with persistent sepals.

*Fl.* & *Fr.*: December-June.

Recorded on the basis of N.P. Singh (*l.c.*).

Small trees, 6-12 m tall with yellowish branches. Leaves elliptic or ovate or oblong-lanceolate, 6-18 x 4-10 cm, base cuneate or rounded, bluntly acuminate at apex, coriaceous, dark green above, pale beneath, glossy on both sides; lateral nerves numerous, not prominent beneath; petioles 1-1.5 cm long, channelled. Cymes axillary, 3-flowered; flowers ca 1 cm across, yellowish-white. Male flowers: sepals 4, suborbicular, 6-8 mm; petals 4, obovate-oblong, 6-10 mm long; stamens many, monadelphous around the pistillode. Female flowers: slightly smaller than males; staminodes around ovary; ovary 2-celled, oblong. Berries ellipsoid, pruiniform, 3-4.5 cm long, supported by accrescent sepals, orange-yellow when ripe; seeds 1-2, oblong; ellipsoid, ca 7 x 5 mm, angled.

**Fl. & Fr.:** February-October.


Trees, 15-12 m tall, deciduous; branchlets ± angular. Leaves 5-12 x 3-4 cm, elliptic-lanceolate, young leaves reddish, base attenuate, acuminate at apex, lateral nerves numerous; petioles 1-1.5 cm long. Male flowers ca 1 cm across, axillary or terminal in fascicles of 3-8, short pedicelled; sepals 4, ovate, 4-5 mm long, unequal, fleshy, yellow; petals 4, twice as long as sepals, oblong, yellow, flushed with pink; stamens numerous on fleshy receptacles. Female flowers slightly larger than males, in terminal fascicles of 2-5; ovary 4-8-celled; staminodes in a ring. Berries globose, 3-4 cm across, often obscurely globular, beaked, vertically grooved, reddish when ripe, 4-8-seeded; seeds oblong, ca 2 cm long.

**Fl. & Fr.:** December-July.

Aizawl, 900 m, *Parry* 661, (fide C.E.C. Fischer, l.c.).

Large shrubs or small, evergreen trees, 4-12 m tall. Leaves narrowly lanceolate or elliptic lanceolate, 6-10 x 2.5-3.5 cm, base cuneate, long acuminate at apex, entire along margins, shining, green above, pale beneath, glabrous, midrib prominent; lateral nerves 8-10 pairs; petioles 0.8-1 cm long. Male flowers solitary or in pairs, 7-8 mm across, terminal or axillary, creamy pink or reddish-yellow; sepals 4, 2-4 mm long, oblong; petals 4, red, slightly oblique, somewhat shorter than sepals; stamens 18-40 in globose mass. Female flowers terminal or axillary, solitary, ovary 6-8-locular, obovoid, stigmatic rays 6-10, sessile, tuberculate. Berries 2.5-3 cm across, obovoid with persistent sepals, 6-8-seeded; seeds 1-1.5 cm long.

*Fl. & Fr.*: February-September.

Common inside moist dense forests. Bunglang, 240 m, Deb 31467; Saitah, D.K. Singh 98940; Dampfiling, D.K. Singh 99161.


Tall, deciduous trees, up to 20 m, with oval crown. Leaves obovate, oblong or oblanceolate, 15-30 x 7-13 cm, cuneate at base, acute-obtuse at apex, undulate along margins, subcoriaceous-membranous; midrib prominent; lateral nerves 5-15 paired; petioles 2-4 cm long. Male flowers pale green, in few flowered, terminal panicles, ca 1 cm in diam.; sepals 4, outer pair 9-10 x 12 mm, inner pair 9 x 6 mm; petals 4, oblong-obovate, 9-11 mm long; stamens infinite. Female flowers solitary, terminal, ca 2 cm in diam.; yellow green or pale green; ovary globose, 8-12-loculed. Berries orange-yellow, globose, 7-11 cm in diam.; seeds 8-10, reniform, with fleshy aril.

*Fl. & Fr.*: September-July.


Trees, 15-20 m tall; branchlets decussate. Leaves oblong-elliptic or broadly elliptic or often obovate, 6-20 x 4-9 cm, base cuneate, shortly acuminate at apex, entire along margins, subcoriaceous, midrib conspicuous below, glabrous and shining above; lateral nerves 7-10 pairs; petioles 1.5-2 cm long. Male flowers in terminal, bractiate panicles, ca 1.5 cm across, dull white, sweet scented; sepals 4, outer pair ca 2 mm long, suborbicular, thick, inner ca 3 mm long, green; petals 4, ovate, ca 8 mm long; stamens numerous. Female flowers in 5-8 cm long, terminal spikes; ovary subglobose, tubercled, 5-loculed. Berries globose to ellipsoid, 2.5-3 cm across, yellow when ripe, succulent, usually 4-seeded; seeds arillate, aril pulpy.

*Fl. & Fr.*: November-July.

Common in dense, shady places. Tobze-leng, Leslie 318 (CAL); Champhai, 3400 m, Deb 30887; Saitah, D.K. Singh 98852.

*Uses:* Fruits edible.


Medium sized trees, 10-20 m tall with drooping angular branches. Leaves oblong-lanceolate, 10-35 x 5-12 cm, base cuneate, acute or acuminate at apex, recurved along margins, coriaceous, shining above; lateral nerves 20-25 pairs; petioles 1-2 cm long. Flowers 4-8 in axillary fascicles, or from the axils of fallen leaves, pentamerous, 2-2.5 cm across, dull white; sepals 5, outer 2, 4-5 mm long, inner 3, 6-8 mm long, filmbriate,
Fig. 31: *Garcinia xanthochymus* Hook. *f.* ex T. Anderson
concave, orbicular; petals 5, 7-8 mm long, shortly clawed. Male flowers: stamens in 5 bundles of 3-5 each, antepetalous, alternating with 5 fleshy glands. Female flowers: ovary 5-locular, ovoid, stigmatic rays 5. Berries subglobose, 3-5 cm in diam., fleshy, apiculate at apex, dark yellow when ripe, 1-4-seeded; seeds oblong, 1.5-2 x 1-1.2 cm, brown.

Fl. & Fr.: Throughout the year.

Common in evergreen forests along the ridges in shade at lower elevations. Tuichang and Demagiri, 300 m, Gage 205, (CAL); Kolasib to Thingdawl, K.P. Singh 93218; Sesawng, M. Sawmliana 95594.

Uses: Fruits edible.

2. MAMMEA L.


Trees, 13-15 m tall. Leaves linear-oblong or oblong-lanceolate or elliptic, 10-22 x 4-5 cm, base acute, acute at apex, coriaceous, glabrous; lateral veins 15-20 pairs, distinct; petioles ca 1 cm long. Flowers ca 1 cm across, solitary or in cymes or fascicles of 3-7 flowers, white, fragrant; sepals 2, 4-5 mm long; petals 6 or 5, oblong, rounded, 6-7 mm long; stamens many; ovary globose, glabrous with bilobed stigma. Fruits 3-4 cm long, mucronate with persistent, thick sepals.

Fl. & Fr.: March-July.

Recorded on the basis of N.P. Singh (l.c.).

3. MESUA L.

Fig. 32: Mesua ferrea L.
Large trees, 25-40 m tall with conical crown. Leaves opposite, decussate, variable, lanceolate or elliptic-lanceolate, 7-12 x 1.7-3 cm, base rounded or narrowed, cuneate, acuminate at apex, coriaceous, glossy and green above, whitish waxy beneath, pinkish soft when young; lateral nerves numerous, inconspicuous; petioles 0.5-1 cm long. Flowers 3.5-8 cm across, solitary or rarely paired, terminal or in axils of upper leaves, sweet scented; sepals 4, in 2 pairs, 1.5-2 cm long, imbricate, thick, concave, velvety, puberulous outside, persistent; petals 4, 2-3 x ca 2 cm, obovate, white with brown or purple veins, curved, caducous; stamens many, forming a globose mass; anthers yellow, conspicuous; style curved with peltate stigma. Fruits ovoid, ca 3 x 2 cm, with persistent calyx, woody and nut like, striate, 1-loculed, dehiscent; apex beaked; seeds 1-4, shining brown, pyriform, ca 2.5 mm long.

Fl. & Fr.: March-October.

Usually cultivated along the road side. Aizawl Leslie, 11' (CAL); Kolasib-Dausalpui., K.P. Singh 93228.

THEACEAE

(K.P. Singh)

1a. Flowers unisexual; fruits subglobose

1b. Flowers bisexual; fruits ovoid-oblong:

2a. Stamens free, filaments glabrous; capsules 3-valved; seeds compressed, winged

2b. Ovate stamens united in a subterminal tube, filaments ciliate; capsules 1-3-valved; seeds subglobose, without wings

1. CAMELLIA L.

1a. Flowers almost sessile or subsessile, erect; sepals caducous:

2a. Leaves elliptic-ovate; stamens 70-80; capsules subglobose, glabrous, apex and base rounded

2b. Leaves elliptic lanceolate, stamens 70; capsules pyriform, pubescent in young stages; apex pointed, base narrowed

3. C. ""
1b. Flowers distinctly pedicellate, drooping; sepals persistent.

3a. Branchlets glabrous; leaves acute at apex; filaments glabrous; capsules 3-seeded ... 4. C. xinensis

3b. Branchlets pubescent; leaves caudate-acuminate at apex; filaments silky villous; capsules 1-seeded ... 2. C. caduca


Shrubs or small trees. 2-5 m tall. Leaves oblong-lanceolate to elliptic-lanceolate, 5-7 x 1.5-2.5 cm, base acute to cuneate, acute to short acuminate at apex, serrulate or nearly entire along margins, coriaceous, glabrous above, pilose or glabrate beneath especially towards the base; lateral nerves 6-9 pairs; petioles 2-4 mm long. Flowers 1.2-2 cm across, white, scented, axillary or terminal, solitary or 1-3 together on short peduncles; sepals tomentose, concave; petals unequal, obovate, 0.8-1.5 cm long; stamens numerous, yellow, connate into a tube; ovary silky-tomentose. Capsules ca 2 cm long, pyriform, pointed at apex.

Fl. & Fr.: September-March.

Moderately common in dense, evergreen forests Theiriat, Deb 312771; Thallang, K.P. Singh 92820; Sairep village, coffee plantations, K.P. Singh 94165.


Shrubs or small trees, 2-5 m tall. Leaves 2.5-7.5 x 1-3 cm, lanceolate, elliptic-oblong-lanceolate, base cuneate, caudate-acuminate at apex, crenate-serrate along margins, glabrous above, ± pubescent or pilose beneath; midrib depressed, puberulous; lateral nerves 8-12 pairs; petioles 3-5 mm long. Flowers axillary, solitary or 2-5 together in fascicles, 2 cm across; white; sepals 5, 3-6 x 2-3 mm, ovate, silky outside; petals obovate, 1.5 cm long, stamens white, monadelphous up to middle, silky hairy; anthers yellow; ovary and style densely villous, white, ovoid. Capsules 1-celled, ellipsoid-globose, subtrigoneous, 2.5 x 2 cm, unilocular, 1-seeded; seeds brown, glabrous, 1 cm across.
FL. & Fr.: September-June.

Commonly occurs in association with *Quercus, Lindera, Pictis*, etc. in evergreen forests. Sairep, 1500 m, *Parry 450* (*fide* C.E.C. Fischer, *l.c.*); Satluj, 1310 m, *Deb 30729* & 30731; Theirit, *Deb 31338*; Thaitlang, K.P. Singh 96824.


Shrubs or small trees, 2-5 m tall. Leaves elliptic-ovate, 4-9 cm x 1.5-3.5 cm, base cuneate, acute to long acuminate at apex, serrulate to entire along margins, glabrous above, pubescent beneath at first; lateral nerves 7-10 pairs; petioles 3-7 mm long. Flowers axillary or terminal, solitary or 2-3 fascicled, ca 2 cm across, white, fragrant, erect; bracts caducous, ± like sepals, silky-tomentose; sepals 3-6 mm long, caducous, silky-tomentose outside, glabrous inside, suborbicular; petals 6 or 7, 1-1.5 cm long, ovate, pubescent outside, glabrous inside, caducous; stamens numerous, outer connate at the base, inner free, glabrous; ovary woolly, ovoid, 3-locular; style 2-3 f.d. Capsules glabrous, greenish-red, subglobose, 1.5-2 cm long, dehiscing into 3 woody valves; seeds 1-3, subglobose, 1-1.5 cm long, brown.

FL. & Fr.: January-October.


Large shrubs or small trees, 1-4 m tall. Leaves oblong-elliptic to obovate, 5-12 x 2.5-5 cm, acuminate or acute at either ends, serrate along margins, glabrous above, pilose along the nerves beneath; lateral nerves
8-12 pairs; petioles ca 2 mm long. Flowers axillary, 3-3.5 cm across, white, solitary or few (2-6) together; pedicels 1-1.5 cm long; sepals 5, 3-4 x ca 2 mm diam., suborbicular, leathery, persistent, hairy outside; petals obovate, 5-8, 1-1.5 cm long; stamens many, glabrous, outer ones connate at base; ovary 1-3-celled, villous. Capsules ovoid, 1.5-2 cm diam., trigonous; seeds globose, 1.5 cm diam., one in each cell, brown.

F1. & Fl.: January-September.

Usually cultivated; sometimes found in wild, Lungleh, Leslie 15 (CAL); Champhai, Deb 31011; Mizo hills, Dutta 340/4; Kamthangpui, K. P. Singh 93238; Zotehlang, K. P. Singh; Saitha, D. K. Singh 93913; Sairep, 1350 m, Mao 107005.

2. EURYXA Thunb.

1a. Shrubs; ultimate branchlets angular, glabrous
1b. Trees, ultimate branchlets terete, pubescent:

2a. Leaves nearly entire or serrulate
2.3.5 cm wide

2b. Leaves serrulate, 1-2.5 cm wide


Large shrubs or trees, 5-12 m tall; young branches pubescent with ± spreading hairs. Leaves elliptic-oblong to elliptic-lanceolate, 2.5-9.5 x 1-2.5 cm, base cuneate, acuminate or acute at apex, crenate or serrulate in upper 2/3 part along the margins, glabrous or sparsely pubescent beneath; midrib channelled above, pubescent beneath; lateral nerves distinct beneath, 12-15 pairs; petioles 2-3 mm long, pubescent. Flowers 2-3 mm across, axillary or on fallen leaf axils, 1-5 together; yellowish, fragrant; sepals ovate, 5, ca 2 mm long, pubescent outside; petals obovate, 5, 3-4 x ca 3 mm, united at base. Male flowers: stamens many, yellow; anther cells not chambered. Female flowers: ovary subglobose, 3-5 loculed, glabrous; styles 3, united above half the length. Berries globose, ca 5 mm in diam. with persistent sepals below, bluish-black; seeds many, trigonous, shiny brown, ca 1 mm long.
Fl. & Fr.: July-December.

Common in evergreen forests, N.E. Langtang, Heilo hill, 1010 m, Gage 93 (CAL); North Vanlaipha, Leslie 337 (CAL); Sialok, 1310 m, Deb 30749; Kawkhul to Hlaupui, K.R. Singh 94322; Sairep, 1350 m, Mao 107015.


Shrubs or evergreen small trees, 1-5 m tall; buds and branches appressed-pubescent, finally glabrous. Leaves broadly elliptic-lanceolate, 4-10 x 2-3.5 cm, base acute to cuneate, obliquely acuminate at apex, entire to serrulate in upper half along margins, coriaceous; lateral veins orange-coloured, 15-20 pairs; petioles 2-5 mm long, pubescent. Flowers 3-4 mm across, white or yellowish white, fascicles of 4-5 at axils of fallen leaves; sepals broadly elliptic, 1.5-3 mm long, oblong, appressed pubescent outside; petals elliptic, 3-5 mm long, glabrous, connate at base. Male flowers: stamens 15; anthers 4-6-chambered. Female flowers: ovary sparsely pubescent or glabrous. Berries 5-7 x 4-5 mm, subglobose to ovoid, blue black; seeds angular, many, tuberculate, brown, 1 mm long.

Fl. & Fr.: November-June.

Lawngtalai, Dutta 33736; Saiha-Bualpui road, Dutta 33847.


Shrubs, up to 6 m tall; branchlets angular with prominent recurrent ridges, usually glabrous or sometimes sparsely pubescent at first. Leaves elliptic, obovate to oblong-lanceolate, 5-7.5 x 1.5-2 cm, base acute or cuneate, acute at apex, bluntly serrate along margins, glabrous, coriaceous, yellowish green; midrib hairy beneath; lateral nerves 10-15 pairs; petioles short, ca 2 mm long, glabrous. Flowers in fascicles of 2-5, ± 2 mm across, greenish-
white to yellowish, glabrous; sepals ca 2 mm long, unequal, broadly ovate, glabrous; petals 2-3 mm long, obovate. Male flowers: stamens 13-17, yellow. Female flowers: ovary ovoid, glabrous. Berries globose 3-5 mm in diam., style persistent, mucronate at tips, brown; seeds many, brown, tuberculata. ca 1 mm long.

*Fl. & Fr.* January-December.


3. **SCHIMA** Reinw. *ex* Blume


Large trees, 15-40 m tall with dense crown. Leaves elliptic-oblong or elliptic-lanceolate, 6-15 x 4-6 cm, base cuneate, acute at apex, entire to undulate along margins, thinly coriaceous, glabrous above, usually pubescent beneath; lateral nerves 8-20 pairs; petioles 1-2.5 cm long. Flowers 2.5-4 cm across, scented, axillary, solitary or paired, white; pedicels 2-3 cm long; sepals 5, 2-3 mm long, imbricate, ciliate on margins, glabrescent; petals 1.5-1.8 cm long, obovate, minutely pubescent outside at base, otherwise glabrous; stamens many; anthers yellow, adnate to base of corolla; ovary hairy at base, globose, tomentose, 5 or-6-loculed. Capsules subglobose to globose 2-2.5 cm in diam., with persistent calyx, grey, pilose, loculicidal; seeds 2-6 in each locule, 6-8 x 4-5 mm, winged, glabrous.

*Fl. & Fr.* March-January.

Fig. 33: *Schima wallichii* (DC.) Korthais
ACTINIDIACEAE
(K.P. Singh)

SAURAUIA Willd.

1a. Flowers in 10-25 cm long axillary panicles, 1.5-1.8 cm across

1. Saurauia napaulensis

1b. Flowers in 4-8 cm long cymes, ca 1.5 cm across

2. Saurauia pundauna


Large shrubs or small trees, 5-10 m; young stem and branches covered with appressed ovate, acuminate scales. Leaves elliptic-oblanccolate, 15-25(35) x 5-10 cm, base rounded, abruptly acuminate or acute at apex, crenate-serrate along margins; glabrous above, brownish tomentose beneath or sometimes glabrate with age; lateral nerves 30-35 pairs; petioles 2-5 cm long, tomentose with scattered scales. Flowers 1.5-1.8 cm across, in axillary 10-25 cm long panicles, pink; sepals ovate, 4-5 mm long, glabrous; petals obovate, 6-10 x 3-6 mm, with recurved tips. Berries subglobose to globose, 8-9 mm in diam., 5-locular; seeds red-brown, many.

Fl. & Fr.: Throughout the year, especially during April-August.

Common on hill slopes in evergreen forests. North Vanaipha. Parry 384, (fide C.E.C. Fischer, l.c.); Parry, s. num (CAL); Leslie 331, 332 (CAL); KawKhul-Hiapui, K.P. Singh 94320; Phaphak, K.P. Singh 96779.


Fig. 34.

Shrubs or small trees, 2-8 m tall with brown, tomentose and densely scaly branchlets. Leaves elliptic-ovate to lanceolate, 10-25 x 7-10 cm, base rounded, acute or short acuminate at apex, truncate, cuspidate-serrate along
Fig. 34: Saurauia punduana Wallich
margins, glabrous above, whitish or rusty brownish tomentose with scales on mid rib beneath; lateral nerves 20-30 pairs; petioles 1-5 cm long, scaly. Cymes 4-8 cm long, scaly, pubescent, axillary or often in axils of fallen leaves, 3-many flowered; flowers ca 1.5 cm across, white to pink; sepals elliptic, ca 8 mm long, glabrous; petals rounded ca 15 x ca 8 mm in diam. Berries globose, 7-8 mm in diam., shining white; seeds many.

Fl. & Fr.: April-December.

Common in moist places on hill slopes and in dense forests in open places. Valley near Fort Lungleh, 900 m, Gage 31 (CAL); Aizawl, Godfrey 492 (CAL); Mamit, Deb 3453; Kolasib-Builang, K.P. Singh 93129; Near Hliaupi, K.P. Singh 94340; Zowbak-Sairup, K.P. Singh 96721.

DIPTEROCARPACEAE

(K.P. Singh)

1a. Stipules amplexicaul; calyx tubular with short lobes; fruits with 2 large erect wings

...1. Dipterocarpus

1b. Stipules not amplexicaul; calyx lobes nearly free; fruits with 3 large and 2 small erect wings

...2. Shorea

1. DIPTEROCARPUS Gaertn. f.

1a. Fruits pointed at both ends; corolla lobes falcate

...1. D. retusus

1b. Fruits globose-subturbinate; corolla linear or linear-oblong

...2. D. turbinatus


Large vigorous trees with tall bole, up to 50 m tall and in 5.5 m girth. Leaves elliptic-oblong, 12-15 x 9-15 cm, base rounded, shortly acuminate at apex, membranous, densely brown ciliate with fascicled hairs; lateral nerves 18-25 pairs; petioles 4-5 cm long. Flower solitary to 3-6, in axillary spikes, 6-8 cm long, pinkish; calyx tube turbinate, ca 1.5 cm long, velvety puberulous outside, silky pubescent inside; corolla lobes falcate, oblanceolate; stamens ca 30; ovary silky-pubescent. Fruits ovoid, ca 5 x 4 cm, pointed at both ends, enclosed in a glabrate and minutely punctate calyx tube; fruiting calyx ca 2 x 2 cm.
\textit{Fl. & Fr.}: June-March.

The species is under cultivation by the forest department for commercial purposes.


Lofty trees with a long cylindrical bole, up to 50 m tall and 5 m in girth; bark vertically fissured. Leaves ovate or ovate-lanceolate, 10-35 x 8-15 cm, base rounded or slightly cordate, acuminate at apex, crenate or entire along margins, coriaceous, glabrous on both surfaces; lateral nerves 12-20 pairs; petioles 2-5 cm long, swollen at both ends; stipules ca 3 cm long, buff tomentose, caducous. Flowers 3-7 in short racemes from axils of fallen leaves. 2.5-3 cm long, white or pinkish; calyx tube obconic, ca 12 mm long, glabrous or pruinose, 5-lobed; petals soft tomentose, 2-3 cm long; stamens ca 30; ovary densely pilose, 3-locular with 2 ovules in each. Fruits with 2 large wings, basal portion obtuse-oblong, 2-2.5 x ca 1.5 cm; wings oblanceolate oblong, 10-13 x 1.5-3.5 cm, pink, glabrous, reticulate with 3 main nerves.

\textit{Fl. & Fr.}: March-May.

In moist, tropical evergreen forests, on the slopes of the hills at lower elevations. Aizawl, Parry 657, \textit{(fide} C.E.C. Fischer, \textit{l.c.)}.

2. \textit{SHOREA} Roxb. \textit{ex Gaertn.}\textit{f.}

1a. Stamens 15; ovary and fruit glabrous

1b. Stamens more than 15; ovary and fruit hairy to densely pubescent

…1. \textit{S. assamica}

…2. \textit{S. robusta}


Tall trees, up to 50 m tall; young shoots, leaves and stipules softly tomentose. Leaves oblong-lanceolate to ovate, 5-15 x 3-6 cm; lateral nerves
15-19 pairs. Flowers in axillary or subterminal panicles, 1-1.5 cm long, white or creamy; calyx pubescent, lanceolate; petals 5, velvety pubescent outside, glabrous within; stamens 15; ovary glabrous; stylopodium absent. Fruits ovoid with 3 large wings, ca 2 x 1.2 cm; wings 6-12 x 0.8-2.5 cm.

Fl. & Fr.: August-February.

Cultivated.


Deciduous, tall trees, up to 50 m tall. Young branches buff, tomentose. Leaves ovate-oblong, 10-38 x 5-18; lateral nerves 12-15 pairs. Flowers subsessile, in large terminal and axillary racemose panicles, yellow or creamy; calyx segment densely yellowish pubescent, ovate or triangular; petals silky outside, glabrous inside; stamens up to 50; ovary hairy; stylopodium present. Fruits ovoid, ca 1.5 cm long; wings 5, 3 large and 2 small.

Fl. & Fr.: March-June.

Cultivated.

MALVACEAE

(K.P. Singh)

1a. Styles twice as many as carpels

1b. Styles as many as carpels, or styles undivided:

2a. Fruit a capsule;

3a. Epicalyx segments winged in fruits:

4a. Flowers polygamous; staminal column short, 5-armed; fruits loculicidally dehiscent

4b. Flowers bisexual; staminal column long, unarméd; fruits indehiscent

3b. Epicalyx segments not winged in fruits:
5a. Styles unbranched; stigmas ribbed or lobed:
   6a. Epalyx segments 3, foliaceous, persistent; seeds enveloped in silky white cotton fibres
       ...3. Gossypium
   6b. Epicalyx segments 3-8, narrow, lacerae, caduceous; seeds glabrous, puberulous
       ...8. Theespia

5b. Styles distally 5-branched; stigmas spreading, globose:
   7a. Calyx irregularly 2-3-lobed, spathaceous, caduceous
       ...1. Abelmoschus
   7b. Calyx regularly 5-lobed, not spathaceous, persistent
       ...4. Hibiscus

2b. Fruit a schizocarp, breaking finally into mericarps:
   8a. Carpels 5-10; mericarps 1-seeded
       ...7. Sida
   8b. Carpels 5-20; mericarps 2 or more seeded
       ...2. Abutilon

1. **ABELMOSCHUS** Medik.


Bristly undershrubs, up to 1 m tall; stems, petioles, pedicels and veins of the leaves densely hirsute by stiff simple hairs, other parts pubescent with minute hairs. Leaves variable in size and shape, 15-30 cm across, orbicular to broadly ovate, palmately 5 or more lobed, base cordate, acuminate at apex, crenate along margins, glabrous or tormentose on both surfaces or only on lower side; petioles 5-20 cm long, 5-9-nerved at base. Flowers axillary, solitary or in terminal racemes, 7-12 cm across; epicalyx segments 4-6, 1-2 cm long, ovate-oblong, hispid by soft simple hairs; calyx 2-3 cm long, spathaceous; corolla yellow with purple centre; petals 4-8 x 3-6 cm, obovate. Capsules 3-8 x 2-2.5 cm, ovoid-oblong, acuminate; seeds 3-4 mm with stellate hairs, dark brown or blackish, reniform with broad sinus.
Fig. 35: Abelmoschus manihot (L.) Medik. subsp. tetraphyllus (Roxb. ex Hornem.) Borss. var. pungens (Roxb.) Hochr.
Fl. & Fr.: September-November.

15th miles South-east of fort Lungleh, 900 m, Gage 157, 159 (CAL); Sairang bunglow, Leslie 86 (CAL); Near Buangpui village, K.P. Singh 93809; Tuichang, K.P. Singh 94243; Hniapui village, K.P. Singh 94307, 94339; Keifang, M. Sawmliana, 99245; Hnathial, 750 m, Mao 107034.

CULTIVATED TAXA


Cultivated as vegetable.

2. ABUTILON Miller


Herbs or undershrubs, up to 3 m tall. Leaves 2-18 x 1-25 cm, lower ones ovate-cordate, long acuminate at apex, upper ones ovate-lanceolate, acuminate at apex, crenate-dentate along margins, densely stellate hairy above, velutinuous with minute hairs beneath, 5-9-nerved at base; petioles 2-10 cm long, pubescent; stipules linear to subulate. Flowers solitary, axillary or in sub-terminal panicles or racemes; calyx cup-shaped; lobes obovate-lanceolate, 7-8 x 3-5 mm, densely hairy outside, velutinuous with simple hairs inside; corolla yellow without purple centre; petals obovate, 2-3 cm long; staminal column 6 mm long. Schizocarps 10-20 mm across, ± campanulate; mericarps 5, 15-18 mm across, each with 2, stout, erecto-patent awns, stellate and simple hairy outside, glabrous inside; seeds 4-6 per mericarp, reniform, ca 2 mm across, blackish-brown.

Fl. & Fr.: November-April.

Common in dry deciduous forests. Lungleh, 900 m, Gage 108 (CAL).
3. Gossypium L.

1a. Leaf lobes linear to lanceolate with an extra tooth in the sinuses; epicalyx segments 3-4-toothed near the apex; capsules ovoid

...1. G. arboreum

1b. Leaf lobes ovate to oblong or elliptic without any extra tooth in sinuses; epicalyx segments 7-9-toothed at apex; capsules rounded or oblong

...2. G. herbaceum


Annual or perennial shrubs, up to 2 m tall, with pilose, purple branches when young. Leaves palmately 5-7-lobed with an extra tooth in the sinuses, ovate to orbicular, base cordate, apex acuminate; lobes 2.5-4 x 0.5-1 cm, petioles 1.5-4 cm long; stipules linear-lanceolate, often tailed. Flowers solitary, axillary; epicalyx segments ovate, 1-2.5 cm long, entire or toothed; calyx 4-5 mm long, cupular, 5-dentate at apex; corolla pale yellow or purple, with or without purple centre; petals obovate, 2-4 cm long, staminal column up to 2 cm long. Capsules 1.5-3 cm across, ovoid to globular, 3-4-loculed, beaked; beak 3-4 mm long; seeds 5-10 or more per locule, 4-7 mm in diam., free, covered with white wool.

Fl. & Fr.: September-November.


Annual herbs or undershrubs, up to 1.5 m high. Leaves 3-6 x 3-6 cm, suborbicular, palmately 3-5 or 7-lobed, base cordate; lobes ovate or oblong-elliptic, apiculate at apex, entire along margins; petals 2-4 cm long; stipules linear to lanceolate. Flowers solitary, axillary; epicalyx segments 1-2 cm long, ovate-cordate; calyx cup-shaped, undulate or truncate, 8-10 mm long; corolla yellow with purple centre; petals 2-3.5 cm long. Capsules ovoid, 3-4 x ca 1.5 cm, acute, 4-loculed; seeds 3-7 in each locule, ovoid 5-6 x 3-6 mm, with greyish-white floss and fuzz.
Usually cultivated for its fibre. Denlang village, Hnathial, K.P. Singh 94108.

4. **Hibiscus I.**

1a. Small trees, capsules often 10-loculed by false septum  ...  2. *H. macrophyllus*

1b. Herbs or undershrubs or shrubs, capsules 5-loculed:

2a. Stems lacking bristles or prickles; epicalyx segments not furcate  ...  4. *H. rosa-sinensis*

2b. Stems with prickles, or bristles, or both; epicalyx segments forked at the tips:

3a. Stipules foliaceous, auricled  ...  5. *H. suratanensis*

3b. Stipules not foliaceous:

4a. Leaves entire or shallowly 3-5-lobed; stipules ovate-lanceolate  ...  1. *H. aculeatus*

4b. Leaves deeply palmately 3-5-lobed; lobation reaching near the base; stipules linear  ...  3. *H. radiatus*


Suberect or trailing undershrubs, up to 1.5 m high, covered with stiff sharp recurved bristles arising from a glandular base. Leaves unlobed or 3-5-lobed, 3-10 x 3-8 cm, base cordate, acute at apex, crenate serrate along margins, pubescent beneath, prickly along the nerves; 5-7-nerved at the base; petioles 2-6 cm long; stipules ovate-lanceolate. Flowers solitary, axillary, 5-10 cm across; buds with a tuft of hairs at the apex; epicalyx 8-12-segmented, forked at apex; calyx deeply 5-lobed; lobes lanceolate, acute, hispid; corolla yellow with a crimson or purple centre. Capsules ovoid, ca 1.5 cm long, covered with rigid, deciduous hairs, enclosed by a large calyx; seeds 4-5 mm across, reniform, brownish.

*Fl. & Fr.:* September-February.


Deciduous trees, 10-25 m tall; young branches covered with golden yellow, stellate hairs, glabrescent later. Leaves 15-30 x 15-35 cm, base cordate, abruptly acuminate at apex, entire along margins, ciliate-tomentose on both surfaces; lateral nerves 7-9 pairs; petioles 10-20 cm long; stipules foliaceous. Flowers 8-10 cm across, solitary, axillary or in terminal racemes; epicalyx segments 10-12; calyx 5-lobed, connate below the middle; lobes lanceolate, 2-3 cm long; corolla yellow with dark purple base often changing to pinkish brown; petals 5-6 cm long, obovoid; staminal column yellow; ovary villous, conical. Capsules ovoid to obvoid, 4-5 x 2.5 cm, beaked, hairy, seeds many in each locule, reniform, 3-4 mm across, hairy.

*Fl. & Fr.:* January-May.

Bunglang to Aizawl, 920 m, Deb 31462.


Erect undershrubs, up to 2 m tall; stems armed with short, retrorse prickles. Leaves 4.5-8 x 1.5-5 cm; lower leaves ovate to oblong with cuneate base and acute apex; upper leaves palrnately 3-5-lobed, lobation up to the base; lobes ovate to oblong or obovate or linear to lanceolate, base cuneate, rounded or cordate, acute or acuminate at apex, serrate along margins, glabrous; lateral nerves 3-5 pairs with nectaries at base; pedicles 4.5-8 cm long; stipules linear-lanceolate, bristly. Flowers 4-6 cm across, solitary; epicalyx segments 8 or 10, acute, forked towards apex, covered with bulbous bristles; calyx membranous; lobes ovate 1-1.5 cm long, acuminate, armed with bristles outside, glabrous inside; corolla bell shaped, *ca* 6 cm across, yellow with purple centre; staminal column *ca* 2 cm long. Capsules ovoid, 2-2.5 x 1.5 cm, densely setose, dehiscing loculicidally into 5 valves; seeds 3-4 mm across, scabrous, brown.

*Fl. & Fr.:* August-February.
One mile from Chinliss, *Leslie* 4 (CAL).


Erect shrubs, up to 4 m tall; stems woody. Leaves ovate or elliptic-ovate, 3-8 x 2-4 cm, base tapering, acuminate at apex, serrate-dentate along margins, glabrous or with few hairs on the veins beneath, 3-5-nerved at base; petioles 1-3 cm long. Flowers solitary, axillary; pedicels mostly longer than petioles; epicalyx segments 5-8, connate at base; calyx campanulate, glandular-stellate-pilose, lobes 1-2 cm long; corolla infundibular, 6-10 cm across, blood-red; petals 5, twisted, obovate; staminal column 4-8 cm long, slightly exserted beyond the corolla with upper portion antheriforous; anthers monothecous, horse-shoe shaped. Capsules rounded-globose, rarely formed.

*Fl. & Fr.*: Throughout the year.

Commonly cultivated as an ornamental plant in the gardens and lawns. *Bungliang*, *Deb* 31455.


Herbs or undershrubs, up to 2 m high; stems armed with recurved, transparent prickles and soft hairs. Leaves 3-7 x 5-10 cm, palmately, 3-5-lobed, suborbicular or obovate; lobes linear-lanceolate, base subcordate, acute at apex, crenate-serrate along margins, 5-9-nerved at base without any nectaries, prickly along the nerves beneath; petioles 3-8 cm long; stipules foliaceous, ciliate, auricled at base. Flowers solitary, axillary; epicalyx segments 10, 12-18 x 2-3 mm, persistent, bristly stalked, spatulate; calyx campanulate, deeply 5-partite, teeth ovate to deltoid, hispid outside with recurved prickles; corolla yellow with deep purple centre; petals obovate, 3-5 cm long; staminal column much shorter than petals, antheriforous throughout; ovary conical, hairy, capsules ca 1.2 x 1 cm, ovoid, acute, covered with bristly white or yellow hairs; seeds 3-4 mm long, black brown, downy.
FLORA OF MIZORAM

*Fl. & Fr.*: September-February.

Rather common in waste-lands and forest edges. Half mile from Renylio Inspection Bungalow, Leslie 1 (CAL); Hnathial-Denglang village, K.P. Singh 94101; Hnathial, 750 m, Mao 107035.

*Uses:* Stems yield a strong fibre of good quality.

CULTIVATED TAXA


   Cultivated as a substitute for jute.


   Cultivated in gardens.

5. **KYDIA** Roxb.

1a. Leaves stellate-pubescent beneath; epicalyx stellate-pubescent

   ...1. *K. calycina*

1b. Leaves glabrous beneath; epicalyx glabrous

   ...2. *K. glabrescens*


   Fig. 36.

Deciduous trees, 10-20 m tall; young branches pubescent-stellate hairy. Leaves palmately 5-7-lobed, ovate or orbicular, 4-10 x 6-14 cm, base subcordate, acute or obtuse at apex, entire or irregularly serrate along margins, stellate-hispid above, grey stellate-pubescent beneath, 5-9-nerved at base; petioles 2-5 cm long. Flowers axillary or terminal in close panicles, polygamous; epicalyx segments oblong or obovate, 4-6, 5-15 x 5-6 mm, slightly stellate-pubescent on both sides; calyx cup-shaped, connate below,
Fig. 36: Kydia calycina Roxb.
ovate, acute; lobes ca 5 x 4 mm; corolla pink or white; petals 5, adnate below with staminal tube; stamens 15; ovary 3-locular, ovoid. Capsules 3-5 mm across, subglobose, yellowish, villous; seeds reniform-ellipsoid, ca 3 x 2 mm, brown, glandular, striate.

Fl. & Fr.: September-February.

Common in subtropical forests. Champai, Myanmar, Deb 31015; Lawngtlai-Kawlchaw, K.P. Singh 92852; Near Hliaupui, K.P. Singh 94310; Kawlulb-Tuichang, K.P. Singh 94431; Pullobasti, K.P. Singh 94469; Sangau-Hnahthial road, 1100 m, Mao 107/193.


Tall trees, up to 30 m; branchlets nearly glabrous. Leaves suborbicular or obovate, 6-12 x 4-12.5 cm, base rounded, rounded or slightly acute at apex, semicrenate to irregular along the margins, slightly lobed at the extremities, glabrous to sparsely pubescent above, glabrous beneath with fine reticulations. 5-7-nerved at base: petioles 3-7 cm long. Flowers in axillary or terminal panicles, white; pedicels stellate-pubescent; epicalyx segments 4 or rarely 5, 5-8 x 2-3 mm, spreading, glabrous; calyx 5, cup-shaped, lobes glabrous out side, stellate hairy inside; corolla ca 1 cm across; petals glabrous, ciliate. Capsules globose, ca 5 mm across, 3-loculed with 2 seeds in each locule; seeds ca 3 mm long, glabrous, brownish.

Fl. & Fr.: October-January.

Jawbak, K.P. Singh 94226.

5. NAYARIOPHYTON T.K. Paul

Small trees, 5-8 m tall, young parts covered with stellate hairs. Leaves ovate-lanceolate, 8-15 x 4-9 cm, base rounded, acute to acuminate at apex, entire or obscurely 3-lobed, upper surface stellate pubescent or glabrous, lower surface densely pilose, 5-7-nerved at base; petioles 1-2.3 cm long; stipules subulate. Flowers axillary, solitary or in panicles of 2-5; epicalyx segments oblong-lanceolate, 4-6, 1-1.5 x 0.4-0.5 cm, persistent, rounded at apex; calyx lobes triangular, 8-15 mm long, stellate hairy; corolla white; petals oblong, 1-2 cm long; densely pubescent outside; staminal tube hairy with reniform anthers; ovary bilocular, globose, densely stellate hairy. Capsules subglobose, ca 8 mm across, indehiscent, hairy, 2 loculed; seeds reniform. ca 4 x 3 mm, single in each locule, glabrous.

_Fl. & Fr._: May-October.

Common in tropical and sub-tropical forests. Sialsuk, _Deb_ 30869; Theiriat, _Deb_ 31082; Thingjal-Lawngtalai, _Dutta_ 33713.

6. _SIDA L._

1a. Leaves linear-lanceolate, glabrescent, awns glabrous

1b. Leaves ovate, oblong, rhomboid, stellate-pubescent on both surfaces, awns with or without retorse hairs:

2a. Awons retorse hairy

2b. Awons not retorse hairy

3. _SIDA ACUTA._


Fig. 37.

Small, erect herbs or undershrubs, up to 2 m high. Leaves elliptic-lanceolate or lanceolate, 3-6 x 0.3-1.3 cm, base rounded or subacute, acuminate at apex, serrate along margins, both surfaces hairy, glabrescent, 3-nerved at base; petioles 2-6 mm long, pubescent; stipules of each pair different, one linear-lanceolate, other linear-filiform. Flowers 1-1.5 cm across, light yellow, solitary, axillary or in clusters of 2-3; calyx 5-lobed, campanulate; lobes ca 7 mm long; corolla light yellow, emarginate, eciliate at base, outside sparsely covered with glandular hairs; staminal tube with simple and glandular hairs; ovary ovoid. _Mericarp_ 6-10, tetrahedral, 3-4
Fig. 37: Sida acuta Burm. f.
mm long, rugose with two awns at apex, awns glabrous, 1-seeded, seeds triangularly ovoid, ca 2 mm long, dark brown.

*Fl. & Fr.: September-May.*

Common in open places. Aizawl, Godfrey 537 (CAL); Sairang, 680 m, Deh 30578; Tlabung, K.P. Singh 94257; Hnathial, 750 m, Man 107031.


Erect undershrubs, up to 1 m high. Leaves ovate-oblong or orbicular, 2-5 x 1-2 cm, base cordate, acute at apex, crenate-serrate along margins, densely velutinous with minute stellate hairs on both surfaces; lateral nerves 5-7 pairs; petioles 4-6 mm long; stipules filiform, pubescent. Flowers solitary, axillary or in axillary clusters of 2-5 flowers; calyx campanulate, lobes deltoid, acute, pubescent outside; corolla yellow, petals obliquely obovate; staminal column ca 2.5 mm long, hairy; ovary stellate-hairy. Mericarps 6-10, 3-4 mm long, excluding awns, reticulate with a pair of awns at the tip; awns retrorsely hairy, exceeding the calyx; seeds reniform, ca 2 mm long, flattened, black.

*Fl. & Fr.: Throughout the year.*

Very common in open places along the road side and hill slopes. Hnathial-Lungle Road, K.P. Singh 94183, 96645; Tlabung, K.P. Singh 94265.


Fig. 38.

Undershrubs, up to 1.5 m high, stems erect, covered with small stellate hairs. Leaves ovate-oblong, rhomboid or lanceolate, 2.5-5 x 0.6-2 cm, truncate or cordate at base, acuminate at apex, apically serrate to crenate,
Fig. 38: *Sida rhombifolia* L. subsp. *rhombifolia* var. *rhombifolia*
entire towards base, covered with minute stellate hairs on both surfaces; petioles 2-7 cm long, covered with minute stellate hairs. Flowers axillary, usually solitary, yellow-pale orange, pedicels 2-3 cm long; calyx campanulate, 4-5 mm long; corolla 1-1.5 cm across, petals glabrous, staminal column shorter than petals. Mericarps 6-12, mostly with 2 mucros, occasionally with 2 awns; awns 1-2 mm long, glabrous; seeds glabrous, ca 2 mm across.

Fl. & Fr.: May-December.

Common in tropical areas, Keifang. M. Sawamliana, 95534.

8. THESPESIA Sol. ex Correa


Arborescent shrubs, up to 3 m tall, herbaeous portion downy with densely tomentose-stellate hairy twigs. Upper leaves unlobed, 5-10 x 2-18 cm, ovate to oblong, base rounded or crenate, acuminate at apex; lower leaves pinnately 3-5-lobed, lobes orbicular, 5-15 x 1-3 cm, base cordate, acuminate at apex, serrate-dentate along margins, sparingly stellate-pilose above, densely tomentose beneath, 5-7-nerved at base, linear; nectary at the base on the midrib beneath; petioles 5-10 cm long, stellate hairy; stipules lanceolate to subulate, stellate hairy. Flowers solitary, axillary or in long stalked racemes of 1-5 flowers; epicalyx segments 5, caducous; calyx with 5 subulate-deltoid segments, ca 5 mm long, cymatiform, stellate hairy; corolla yellow with dark purple centre, campanulate; petals obovate, ca 6 cm long, rounded at apex; staminal column 1-2 cm long, glabrous; ovary hairy. Capsules ovoid to globose or oblong, 3-4 x 1.5-2 cm, minutely stellate hairy, dehiscing into 5-valves; seeds 8-15 per locule, obovoid, ca 4 mm long, angular with short simple hairs in beginning, black.

Fl. & Fr.: August-December.

Common on the hill slopes along the road side in open places. Bed of Mat River, 20 miles East of Lunglei, 450 m, Wenger, (side C.E.C. Fischer, l.c.); Champhai to Myanmar border, Deb 32044; Haathial-Lunglei Road, K.P. Singh 94185.
Fig. 39: Thespia lampas (Cav.) Dals & Gibs.
9. **URENA L.**


Much branched, erect undershrubs, up to 1.5 m high. Leaves variously lobed, 4-10 x 2-8 cm, ovate to orbicular-angular or shallowly lobed. Lobes 3-5, base cordate, obtuse to acute at apex, crenate to serrate along margins, both surfaces stellate hairy with linear nectaries beneath, 3-7-nerved at base; petioles 1-7 cm long; stipules lanceolate to obvate. Flowers 1.5-2.5 cm across, axillary, solitary or in clusters of 2-3; epicalyx segments 5-8 mm long, cupular, adnate to the calyx at base; calyx tubular to campanulate; sepals ovate to deltoid, 4-6 mm long, corolla pink with purple centre; petals tomentose outside, obvate, 1-1.5 cm long, ovary 5-loculed with one valve in each locule. Schizoecarps 5-7 mm across, globular, tomentose, covered with barbed bristles. Mericarps ca 4 mm high, dorsally and laterally stellate hairy and reticulately veined; seeds 2-3 mm across, trigonous, angular, vertically grooved, hairy, brown.

*Fl. & Fr.*: July-February.


**BOMBACACEAE**

(K.P. Singh)

1a. Flowers large; stamens numerous; filament with a single reniform anther

1b. Flowers small; staminal tube divided into 4 filaments, each with 2-3 linear anthers

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1. **BOMBAX L.**

1a. Trunk prickly; flowers 8-10 cm long; stamens less than 100; filaments flat; capsules 10-18 cm long; seeds brown

1b. Trunk without prickles; flowers 12-15 cm long; stamens more than 400; filaments filiform; capsules 15-20 cm long; seeds black
Fig. 40: Urena lobata L.

Large deciduous trees, 30-40 m tall; trunk buttressed with conical woody prickles; crown lax, pyramidal; bark smooth grey. Leaves digitate, 5-7-foliolate; petioles 10-15 cm long, pulvinate; leaflets 8-15 x 3-7 cm, cuneate at base, acuminate at apex, entire along margins, glossy above, puberulous to glabrous beneath; petiolules 1.3-2.5 cm long. Flowers in leaf axils, 8-10 cm long, scarlet-red or white, showy, solitary or in clusters; calyx 2-5-lobed, campanulate; lobes 3-4 cm long; petals 5, fleshy, obovate, 8-15 x 3-4.5 cm; stamens less than 100, in 5-6 bundles; filaments red; ovary conical, woolly or glabrous. Capsules oblong-ovoid, 10-18 cm long, 5-valved, velvety; seeds many, dark brown, smooth surrounded by masses of white silky fibres.

*Fl. & Fr.*: February-June.

Bukpui, 900 m, *Parry 622*, (side C.E.C. Fischer, l.c.).


Large deciduous trees, up to 15 m tall, with buttressed trunk at base but without prickles; bark flesh coloured. Leaves digitately 5-9-foliolate; petioles 12-16 cm long; leaflets oblanceolate or obovate, 9-12 x 3-5 cm, cuspidate-acuminate at apex, glaucous beneath. Flowers 12-15 cm long, solitary, scattered on leafless branchlets, pink-red; calyx 3-5 cm long, campanulate, silky inside; petals 5, 10-15 cm long, scarlet, linear-oblong, stellate-pubescent outside; stamens in 5 bundles, more than 400; filaments filiform. Capsules oblong, 15-20 x 4-5 cm, glabrous, 5-valved; seeds many, obovate, smooth with white silky fibres outside.

*Fl. & Fr.*: December-April.
FLORA OF MIZORAM

Recorded by C.E.C. Fischer (l.c.).

2. CEIBA Mill.


Tall deciduous trees, 15-20 m, with prickly stem when young, buttressed at base. Leaves digitate, 5-9-foliolate; leaflets 9-12 x ca 4 cm, oblong to oblong-lanceolate, narrowed at base, acuminate at apex, entire, glabrous; petioles 7-25 cm long. Flowers white, usually 2-15 together, rarely solitary, axillary or grouped on defoliate branchlets; stipules caducous; calyx irregularly 5-lobed, campanulate, ca 1 cm long, glabrous outside, silky inside; petals 5, 3.5-4.0 cm long, connate at base, oblong, woolly outside; staminal tube divided into 5 phalanges, each with 3 filiform branches bearing 2-3 anfractose anthers. Capsules fusiform to ellipsoid, 10-18 x 5-6 cm, coriaceous, brown at maturity; seeds many, subpyriform, black, embedded in silky fibres.

**Fl. & Fr.:** December-April.

Cultivated as a hedge plant. Darlak, Deb 3403.

**STERCULIACEAE**

(K.P. Singh)

1a. Herbs:

2a. Stamens 5, solitary; staminodes absent

2b. Stamens 15, in 5 groups of 3 each; staminodes much longer than stamens

3a. Flowers unisexual or polygamous; calyx coralline; petals absent; fruits with distinct folicles

3b. Stamens 5

4a. Sepals deciduous

4b. Sepals persistent

5a. Leaves deciduous

5b. Leaves persistent

6. *Pentapetes*
4a. Leaves silvery scaly beneath; anthers 5; fruits indehiscent samaras
   ... 4. Heritiera

4b. Leaves without silvery scales beneath; anthers numerous; fruits dehiscent follicles:

5a. Androgynophore much extending beyond calyx; follicles membranous, opening long before maturity
   ... 2. Firmiana

5b. Androgynophore shorter or not extending beyond calyx; follicles woody, not opening before maturity:

6a. Seeds winged
   ... 8. Pterigota

6b. Seeds wingless
   ... 10. Sterculia

3b. Flowers bisexual; calyx and corolla distinct; petals present; fruits combined, without distinct follicles:

7a. Woody climbers; capsules covered with stout prickles and barbs; seeds not winged
   ... 1. Byttneria

7b. Shrubs or trees; capsules not covered with stout prickles; seeds winged or not winged:

8a. Usually shrubs, rarely small trees
   ... 3. Helicteres

8b. Large trees:

9a. Flowers solitary or in few-flowered cymes, large; staminal column remains inside the flowers; staminodes 5; anthers stipitate
   ... 7. Pierospermum

9b. Flowers in many-flowered corymbose panicles, small; staminal column exerted; staminodes absent; anthers sessile
   ... 9. Reevesia

1. BYTTNERIA Loebl.

1a. Leaves glabrate, entire along margins; capsules distantly covered stout prickles
   ... 1. B. grandifolia

1b. Leaves 3-5-lobed, serrulate along margins; capsules densely covered with barbed prickles
   ... 2. B. pilosa

Large climbing or straggling shrubs; young branches grooved, stellate-tomentose. Leaves orbicular, ovate-orbicular, 11-18 x 10-18 cm, base cordate, 5-7-nerved, abruptly acuminate at apex, entire along margins, glabrate above, puberulous along the nerves beneath; lateral nerves 4-5-paired; petioles 5-12 cm long, sulcate, tomentose; stipules linear-lanceolate, deciduous. Flowers 4-6 mm across, axillary, in panicles or cymose umbels; sepals 4-5 mm long, connate below, tomentose, lanceolate; petals 4-5 mm long, clawed with hooded limb. Capsules 3-5 cm across, globose, woody, septicidally 5-valved, glabrous, covered with stout prickles; prickles sharp, curved, distantly situated, conical; seeds ovate-oblong, ca 5 x 3 mm, 1 in each locule, immersed in watery sap.

Fl. & Fr.: April-December.

Climbing on large trees in evergreen forests. Lunglei, 900 m, Gage 69. (CAL); Mizo hills, Dutta 33419.


Large, woody, climbing shrubs; branchlets grooved, densely stellate-pubescent. Leaves orbicular to ovate, 6-16 x 7-15 cm, ± shallowly 3-5-lobed; lobes deltoid, base cordate, 7-9-nerved, abruptly acuminate at apex, serrulate-dentate along margins, stellately pubescent on both surfaces; lateral nerves 3-5, paired; petioles 3-12 cm long, pilose. Flowers in axillary paniculate cymes, 4-6 mm across, orange-yellowish; sepals longer than petals, tomentose, ca 3 mm long; petals yellow, incurved; anthers yellow, staminodes ovate. Capsules subglobose, 1.5-2 cm across, septicidally 5-valved, densely covered with barbed prickles; prickles soft and thin; seeds 1 in each locule, triangular, ca 5 x 2 mm.

Fl. & Fr.: September-May.

Common in shaded places in scrub jungles and shrubby areas. Between Lunglei and Ridge camp, 900 m. Gage 200. (CAL); Donkoma-
Fig. 41: Byttneria pilosa Roxb.
Pangsul, 1050 m, Leslie 388 (CAL); Thenzawl, K.P. Singh 93884; Thlabung, K.P. Singh 94297; Dampa, D.K. Singh 98978; Hnathial-Aizawl road, 750 m, Mao 107062.

2. FIRMIANA Marsili


Tall deciduous trees, up to 25 m, young parts + pubescent. Leaves variable in size and shape, palmately 3-5-lobed, or slightly lobed or not lobed on mature trees, 10-18 x 10-22 cm, base truncate or cordate, lobes caudate-acuminate at apex, entire along margins, glabrescent on both surfaces, 5-7-nerved at base; petioles 7-26 cm long, pulvinate. Flowers 2-3 cm across, in short, scurfy-tomentose, axillary or terminal; pedicels or racemes; calyx funnel-shaped, 1.1-1.5 cm long, stellate-tomentose outside, velvety inside; androgynophore exserted, 5-10 mm long; anthers 10, 2-celled; carpels at the tips, 3-5-lobed. Follicles 6-8 x 2-4 cm, opening at early stage, stipitate, membranous, compressed, glabrous; seeds 2-3 in each follicle, ovoid, yellow, smooth, compressed.

*Fl. & Fr.*: February-June.

Frequent in deciduous forests. Aizawl, 1200 m, Parry 637, (fide C.E.C. Fischer, l.c.); Near Fort Lunglei, 900-1200 m, Gage 111 (CAL).

3. HELICTERES L.


Diffuse shrubs; branches purple, glabrescent. Leaves obliquely lanceolate, 8-11 x 1.5-3 cm, base cordate, acuminate at apex, serrulate.
Fig. 42: Helicteres plebeja Kurz
along margins, thinly stellate-hairy; petioles 5-6 mm long; stipules subulate, caducous. Flowers in spikes, calyx ca 6 mm long. Ripe carpels 1.5-2 cm long, oblong, not twisted spirally, beaked, hairy.

*Fl. & Fr.*: June-February.

Saliba, *Dutta* 33806.

4. **HERITIERA** Alston


Large trees; young branches stellately-tomentose. Leaves unifoliolate, lanceolate or ovate-lanceolate, 6-12 x 3-5 cm, base obtuse, acuminate at apex, coriaceous, glabrous above, silvery stellate hairy or brown scaly beneath; lateral nerves 4-5 pairs; petioles 1-2 mm long, scaly. Panicles 4-5 cm long, axillary, much branched, rusty stellate-pubescent. **Male flowers**: 4-5 mm long, cream-coloured; calyx campanulate, 4-5-lobed; staminal column slender, anther throat in a regular ring in an androgynophore. **Female flowers**: calyx 5-6-lobed with 5-6 sessile ovaries. Fruit a samara, 5-7 cm long, glabrous, strongly veined, with a long membranous wing, 1-seeded.

*Fl. & Fr.*: April-December.

*Wenger, s.n.**, s. loc., (fide C.E.C. Fischer, l.c.).

5. **MELOCHIA** L.


Small herbs, up to 1 m high; stems slender, glabrous. Leaves variable, ovate, oblong-ovate, ovate-lanceolate, 2-3 x 1-1.3 cm, base rounded or cordate, acute to rounded at apex, irregularly serrate along the margins,
glabrous on both surfaces or thinly hairy on nerves beneath. 5-nerved at base; petioles 1-1.5 cm long. Flowers pink-violet, in crowded terminal heads; calyx 5, connate at base, 1-2 cm long, ciliate, hairy outside; petals 5, free, obovate, 2-4 mm long; stamens 5; staminal cup spindle-shaped; ovary 5-loculed, hairy. Capsules globose to subglobose, 3-5 mm across, hispid, loculicidally 5-valved; seeds brown, 2 mm long, 1 in each locule, trigonous.

_Fl. & Fr._: July-April.

Common. Thenzawi-Buarpui road, _K.P. Singh 93967_.

6. **PENTAPETES** L.


Branched herbs, up to 2 m high, glabrous or sparsely stellate hairy. Leaves deltoid to hastate to linear, 4-12 x 0.4-0.7 cm, base deltoid, acute at apex, crenate-serrate along the margins, glabrous above, stellate hairy on the veins beneath, 1-nerved at base; petioles _ca_ 1 cm long; stipules subulate. Flowers deep red, 1-2 in axillary fascicles; calyx 5-lobed, connate at base, lobes 1-1.2 cm long, stellate-hairy with simple bristles outside; petals 5, obovate, _ca_ 1.2 cm long, truncate; stamens 15 in 5 groups of 3 each; ovary 5-locular with many ovules in each locule. Capsules subglobose to oblong, 1-1.5 x 0.5-1 cm, 5-valved, stellate-tomentose with bristles; seeds obovate, _ca_ 2 mm long, dotted.

_Fl. & Fr._: September-January.

A monotypic genus, scarce in the area. Usually cultivated. Bindarnaswar, _K.P. Singh 94279_.

7. **PTEROSPERMUM** Schreb.

1a. Leaves semi sagittate at base; capsules terete

1b. Leaves not semi sagittate at base; capsules terete or angular
2a. Leaves broadly ovate to elliptic-oblong, 12-40 cm long; calyx lobes fleshy; capsules angular ... 1. P. acerifolium

2b. Leaves lanceolate or oblong-lanceolate; calyx lobes not fleshy; capsule terete ... 2. P. lanceifolium


Tall evergreen trees, 12-15 m with oval crown; young parts brown, stellate-tomentose. Leaves variable in shape and size, broadly ovate to elliptic-oblong or orbicular, often variously lobed, 12-40 x 12-25 cm, base cordate or peltate, acute at apex, entire or remotely toothed along margins, coriaceous, glabrous above, brown tomentose beneath, palmately 7-9-nerved at base; lateral nerves 3-6-paired; petioles 4-10 cm long. Flowers solitary or in 2-3-flowered cymes, white, fragrant; sepals fleshy, linear, 8-12 x 0.8-1 cm, brown, densely tomentose; petals twisted, slightly shorter than sepals, white; staminodes up to 7 cm long; ovary oblong, obscurely 5-angular. Capsules oblong, 12-16 x 5-8 cm, woody, 5-celled, 5-angular, brown tomentose; seeds oblong, 4-6 cm long (including wings), compressed, winged at one end.

Fl. & Fr.: May-February.

Moderately seen on hill slopes in mixed deciduous forests. Kawnpui, on way to Hartawki, K.P. Singh 93269.


Evergreen trees, 12-20 m tall; young parts greyish or whitish tomentose. Leaves lanceolate, oblong-lanceolate, 7-13 x 2-4 cm, base obliquely rounded or subcordate, acuminate at apex, entire along margins, glabrous above, greyish or whitish tomentose beneath; lateral nerves 4-5 pairs; petioles 0.3-1 cm long, stipules linear-subulate, 2-3 mm. Flowers 4-6 cm across, pale-white, fragrant, solitary, axillary on 4-5 cm long,
Fig. 43: Pterospermum acerifolium (L.) Willd.
tomentose peduncles; sepals linear, 3-3.5 cm long, brown hairy outside, villous inside; petals obliquely cuneate, white, slightly longer than sepals. Capsules elliptic-ovoid, 6-8 x 1.5-2.5 cm, woody, loculicidally 5-celled, 5-angled, terete, covered by greyish or whitish tomentum; seeds 2-4 in each locule, 3-4 cm long, winged, compressed, papery, brown.

*Fl. & Fr.*: March-October.

Included on the basis of state Forest department records.


Large deciduous trees, 10-18 m tall, young parts tomentose. Leaves oblong-lanceolate, 11-18 x 3-4 cm, base unequally or obliquely cordate or rounded with one lobe much larger and sagittate, acuminate at apex, entire, glabrescent above, hoary beneath; lateral nerves 5-7-paired; petioles short, 3-4 mm long; stipules pinnatifid. Flowers 11-15 cm across, white, usually solitary, terminal or axillary on short drooping brownish tomentose peduncles, sepals 5, linear, ca 10 cm long, stellate-tomentose outside, velvety inside; petals 5, obliquely ovate-cuneate, 4.5 cm long, fragrant. Capsules elliptic-oblong, 5-8 x 2.5-3.5 cm, woody, covered with yellowish brown tomentum, terete, shortly beaked; seeds *ca* 10 in each locule, winged.

*Fl. & Fr.*: July-February.

Common in mixed and dry forests. In mountain forest, 750-900 m, Wenger 267, (late C.E.C. Fischer, l.c.); Hauruang, 4 miles from Lunglei, 666 m, *Deb* 31405.

8. **Pterygota** Schott & Endl.

Tall trees, up to 40 m, with a high narrow conical crown; trunk straight; young parts golden stellate-pubescent. Leaves simple, crowded at the end of branches, broadly ovate to cordate, 14-22 x 12-17, base cordate to truncate, subacute at apex, entire along margins, glabrous, 7-nerved at base; petioles 5-8 cm long. Flowers 1.5-2.5 cm across, brownish-yellow in few-flowered axillary panicles; calyx 5-6-lobed; lobes linear-lanceolate, ca 1 cm long, stellate-hairy outside. Male flowers: staminal column 0.7-1.5 cm long, bearing 4-6 sterile carpels a top, around which stamens are arranged in 4-5 groups. Female flowers: carpels sessile, style recurved; stamens in bisexual flowers similar to those in male flowers. Follicles 4-10 cm across, woody, shortly stalked; seeds many, winged, elliptic, compressed.

Fl.: Dec.-March; Fr.: July-March.

In evergreen forests. Tuivawl, M. Sawmiliana 99248.

9. REEVESIA Lindley


Trees, up to 18 m tall. Leaves ovate or ovate-oblong, 10-14 x 4-6 cm, base rounded, acuminate at apex, entire along margins, coriaceous, glabrous above, sparsely-pubescent beneath; lateral nerves 6-8 pairs; petioles 2-3 cm long; stipules deciduous. Flowers white, scented, in dense corymbose panicles of cymes; panicles terminal or from axils of fallen leaves; calyx finally 5-lobed, 1-4 mm long, stellate-tomentose; petals spatulate, 1-1.5 cm long, clawed; staminal column exceeding the petals with a globose head of anthers in 5 bundles of 3 each. Capsules obovoid-oblong, 4-5 x 2-6 cm, pendulous, 5-loculed, brown, tomentose outside; valves woody, dorsally keeled, dehiscing septically; seeds 1-2, 2-3 cm long, winged.

Fl. & Fr.: April-February.

Kolasib-Chumliang, Dutta 33292; Sairep, Dutta 33581; Tawipui, Dutta 33684.
Fig. 44: Reevesia wallichii R. Br.
10. **Sterculia L.**

1a. Deciduous trees; leaves palmately lobed:

2a. Flowers 1-1.5 mm across; follicles cylindrical, glabrescent

2b. Flowers 6-7 mm across; follicles oblong or obovoid, tomentose:

3a. Leaves shallowly 5-lobed; lobes entire, velvety beneath; panicles erect; follicles covered with short tomentum intermixed with numerous stiff, fragile hairs

3b. Leaves deeply 5-7-lobed; lobes 3-fid, villous beneath; panicles pendulous; follicles uniformly tomentose

4b. Follicles woody or coriaceous, not boat shaped:

5a. Leaves attenuate at base, minutely adpressed hairy beneath; panicles drooping; sepals tapering, caudate, hairy; follicles crimson-red

5b. Leaves rounded at base, glabrous on both surfaces; racemes erect; sepals glabrous; follicles pink


Fig. 45.

Shrubs or small trees, 5-10 m tall. Leaves ob lanceolate or oblong-elliptic, 12-26 x 5-10 cm, tapering at base, abruptly short acuminate at apex, entire along margins, coriaceous, glabrous above, sparsely stellately hairy beneath; lateral nerves 10-12-paired; petioles 2-5 cm long. Flowers in axillary rarely supra axillary, in 10-25 cm long, drooping panicles, 1.5-2 cm across, pinkish-red, velvety outside; calyx 5, tubular; lobes narrow, 8-12 mm long, patently white hairy outside. **Male flowers**: staminal column
Fig. 45: Sterculia hamiltonii (O.Kuntze) Adelb.
short, curved, glabrous, 4-5 mm long; Female flowers: ovary hairy with sterile anthers at base, ca 2 mm long. Follicles 2-5, oblong-lanceolate, 6-10 x 1-2 cm, drooping, beaked, spreading, crimson red inside, velvety outside, compressed; seeds 4-8, 1-1.5 x ca 0.8 cm, black, ovoid, smooth.

Fl. & Fr.: April-October.

Common in dense evergreen forests along the road side. Lushai hills, Parry s.n. (CAL); Sonai-Sakachu, Leslie 42 (CAL); Sairop forest, Dutta 33674; Thingsai to Lawngtlai, Dutta 33714


Deciduous trees, up to 15-20 m tall, young shoots tomentose. Leaves 30-40 cm in diam., palmately 5-7-lobed, lobes acuminate, densely pubescent beneath with stellate hairs. Flowers 1-1.5 cm across, pale-ochraceous with reddish base, in tomentose, terminal panicles on thick branches; calyx tomentose, lobes lanceolate, spreading; ovaries hispid-tomentose. Follicles 5-7, rather cylindrical, 5-7 cm long, covered with fragile short hairs, glabrescent; seeds many, oblong, black.

Fl. & Fr.: February-April.

Lushai hills, Parry, s.n. (CAL).


Medium sized trees, 6-15 m tall. Leaves oblong-elliptic to oblanceolate, 8-14 x 3-6.5 cm, base rounded or subcordate, abruptly acuminate at apex, entire along margins, coriaceous, glabrous; lateral nerves 6-8-paired; petioles 1-5 cm long, swollen at both ends. Panicles axillary or extra-axillary, 5-10 cm long, simple or compound, stellate-pubescent. Flowers 1.5-2 cm across. red; calyx lobes ovate-lanceolate, 6-8 mm long, scarlet-brownish, pubescent out side. Male flowers: staminal column ca 1 mm
long. Female flowers: ovary on gynandrophore, with 5 stigmas. Follicles 1-5, 6-8 x 1.8-2.5 cm, scarlet, long-beaked, ellipsoid-lanceolate, compressed; seeds 4-8 in each follicle, 2 cm long, oblong, black.

Fl. & Fr.: February-August.

Recorded by C.E.C. Fischer (l.c.).


Tall deciduous trees, 30-40 m, all parts glabrous. Leaves oblong to ovate-oblong, 15-30 x 12-15 cm, base rounded, bluntly acuminate at apex, entire along margins, coriaceous, glabrous; petioles 4-12 cm long. Flowers panicled at the end of the thick branchlets, 7-9 cm across; calyx 5-lobed, 4-6 mm long, oblong-lanceolate, orange or yellowish with reddish base, stellate-puberulous. Male flowers: stamens 10-15 with pilose anthers. Female flowers: ovary villosus on long gynophore. Follicles: boat-shaped, 15-18 x 7-9 cm, much nerved and veined, ± puberulous outside, 1-2-seeded; seeds globose, 1.5-2 cm in diam.

Fl. & Fr.: February-April.

Wenger s.n., s.loc., (fide C.E.C. Fischer, l.c.).


Soft woody trees with white papery bark. Leaves simple, crowded at the end of branches, digitately 3-5-lobed, 18-25 cm in diam., base cordate, caudate-acuminate at apex, entire along margins, glabrous or nearly so above, tomentose beneath; petioles 10-12 cm long, terete. Flowers in terminal panicles, 6-7 mm across, yellow; panicles tomentose, brown, 10-15 cm long, male and female flowers mixed; calyx 5-partite with acute tomentose spreading lobes, 5 mm long. Male flowers: staminal column 3 mm long with 10-15 anthers on top. Female flowers: ovaries with sterile
hairs at base, on ca 3 mm long gynandrophore. Follicles 4-5, oblong to ovoid-oblong, 3-4.5 x 1.5-2 cm, orange to bright red, pubescent, with stinging hairs intermixed; seeds 3-6 in each follicle, oblong, 6-7 x ca 5 mm, black.

Fl. & Fr.: October-April.

Recorded by C.E.C. Fischer (l.c.).


Deciduous trees, 10-15 m tall: young parts brown tormentose with stellate hairs. Leaves simple, deeply palmately 5-7-lobed, crowded at the end of branchlets, 25-45 cm in diam., base cordate, lobes oblong or ovate-oblong, acuminate at apex, sometimes 3-fid, stellate hairy above, tormentose beneath; lateral nerves 5-7 paired; petioles 25-60 cm long, tormentose. Flowers 0.6-1.5 cm across, pinkish-yellow in crowded drooping panicles; panicles 15-30 cm long, terminal, brown, tormentose, male and female flowers intermixed; calyx campanulate with short, acute, pubescent lobes. Male flowers: staminal column short with 10 anthers. Female flowers: ovary 5, hairy; stigma 5-lobed. Follicles 2-5, 3-4 x 1.5-3 cm, sessile, oblong, reddish brown, tomentose outside, scarlet-red inside; seeds 3-5 in each follicle, 1 x 0.5 cm long, oblong, black.

Fl. & Fr.: March-September.

Common in deciduous forests. Sairang, 600 m. G.K. Deka 23470; Hauruang, 4 miles from Lungleh, Deb 31360; Tuipui, on the way to Darzo, K.P. Singh 96938.

TILIACEAE

(K.P. Singh)

1a. Fruits winged

1b. Fruits not winged:

2a. Trees or shrubs; fruit a drupe

2b. Herbs or undershrubs; fruit a capsule:

...1. Colona

3. Grewia
3a. Capsules echinate
3b. Capsules not echinate

1. **COLONA** Cav.


Medium sized trees, up to 15 m tall; young parts scabrid with short stellate hairs. Leaves roundate-ovate or obovate-oblong, often shortly lobed, 9-15 x 3-15 cm, base rounded or cordate, 3-7-nerved, acute at apex, irregularly gland-toothed, subcoriaceous, rugulose and scabrous on both surfaces; petioles 2-4 cm long. Panicles terminal, greenish, pubescent, in lax, few, small-flowered clusters; sepals 5, ca 3 mm long, red inside, hoary outside; petals 5, spathulate, yellow with scarlet dots and minute glandular cavity at base; stamens many; ovary 3-5-celled. Capsules ellipsoid, 1.5-2.5 cm across, cocci 3-5, stellate-pubescent, winged, 1-seeded; wings venose.

**Fl. & Fr.**: April-January.

Common in tropical forests. Lunglei, 900 m, Gage 193 (CAL); Lunglei road, 900 m, G.K. Deka s.num.; Sinsuk, Deb 30829; Lwngtalai-Saiha, Dutta 33794; Lawntalai-Mampui road, K.P. Singh 92889; Near Chhiphir village, K.P. Singh 93941; Hliapui, K.P. Singh 94359; Tamdil, M. Sawnmlana 95559; Jawbak, K.P. Singh 96730; Pheilang, K.P. Singh 97081; Lallen, D.K. Singh 98810.

2. **CORCHORUS** L.


Annual, suberect herbs, 30-50 cm high. Leaves lanceolate to ovate, 2-5.5 x 1.5-3.5 cm, base rounded, acute at apex, serrate along margins.
Fig. 46: Colona floribunda (Kurz) Craib.
glabrous above, pilose beneath specially on raised nerves. 3-5-nerved at base; petioles 0.5-3 cm long, purple, pilose; stipules setaceous, sparsely hairy, 5-10 mm long. Flowers 2-3, in leaf opposed cymes, ca 1 cm across, orange-yellow; sepals linear-oblong, 2-4 mm long, apiculate, purple dotted inside; petals obovate, 3-5 mm long, yellow, hairy at base. Capsules 10-20 x 2-5 mm, solitary or paired, 6-angled, 3 of the angles winged, 3-loculed; tips with 3, bifid, glabrous beaks; seeds numerous, truncate at both ends, brown.

*Fl. & Fr.: August-February.*

Common along the roadside in forests, H Nathial-Lungleigh road, K.P. Singh 94190.

3. GREWIA L.

1a. Flowers in terminal panicles; leaves elliptic-oblong; margins subentire to serrulate
   ... 3. *G. nervosa*

1b. Flowers in axillary, terminal or leaf opposed cymes:

2a. Peduncles minute, much shorter or as long as petioles
   ... 1. *G. abutilifolia*

2b. Peduncles distinct, much longer than petioles:

3a. Leaves lanceolate or ovate-lanceolate, glabrous on both surfaces; flowers greenish-white
   ... 4. *G. serrulata*

3b. Leaves oblong-ovate or elliptic, stellate hairy on both surfaces; flowers yellow
   ... 2. *G. criocarpa*


Bushy shrubs or small trees, up to 2.5 m; young parts stellatetomentose. Leaves broadly ovate or elliptic-ovate, sometimes obscurely lobed, 10-18 x 6-12 cm, base rounded or subcordate, acuminate at apex, irregularly serrate, chartaceous, rough stellate hairy on both surfaces, but more densely beneath, 3-5-nerved from base, petioles 1-2 cm long, tomentose; stipules subulate. Flowers in axillary, umbellate, 1-4-flowered cymes, ca 1.5 cm across, greenish brown; sepals 5, narrow-oblong, 8-10 mm long, woolly outside, white, turning yellow inside; petals 5, white,
Fig. 47: Grewia abutilifolia Vent. *ex* A.L. Juss.
shorter than sepals, ciliate at base; stamens many, filaments ca 3.5 mm long; ovary 2-celled, villous. Drupes subglobose, 1-1.5 cm across, 2-4-lobed, turbinate, fleshy, depressed, stellate-tomentose, wrinkled.

Fl. & Fr.: Throughout the year.

Common in exposed moist areas along the forests, Chumphai-Mymensingh border, Deb 31050 (CAL); Sairep, Datta 33552; Saiha, Datta 33823; Kawlkulh-Hliaupui road, K.P. Singh 94304.


Deciduous trees, up to 20 m tall; young parts grey-tomentose. Leaves obliquely ovate, oblong-ovate or elliptic, 3-9 x 1.5-3 cm, base rounded or subcordate, acuminate at apex, crenate-serrate along margins, thinly coriaceous, hispid with stellate hairs above, softly grey-brown tomentose beneath, 5-6-nerved from base; petioles up to 5-7 mm long, grey tomentose. Flowers axillary, in cymes, greenish-yellow, 1-1.5 cm across; sepals linear-oblong, lanceolate, 5-10 mm long; hirsute; petals ovate-lanceolate, ca 3 mm long. Drupes globose, 4-8 mm across, glabrescent, obscurely 2-4-lobed, black.

Fl. & Fr.: February-November.

Common in deciduous forests, Mizu hills, Dutt 92470.


Fig. 48.

Medium sized trees or shrubs, 5-15 m tall; young shoots pubescent. Leaves bifarious, elliptic-oblong, lanceolate or ovate-lanceolate, 10-18 x 4.5-7 cm, nearly oblique to rounded or cordate at base, acuminate at apex,
Fig. 48: Grewia nervosa (Lour.) Panigrahi.
subentire to serrulate along the margins, glabrous on both surfaces, 3-5-nerved at base; petioles hairy, up to 1 cm long. Flowers in axillary and terminal panicles, yellow; sepals 5, oblong-obovate, tomentose; petals ovate, ca 2 mm long, pubescent at base; stamens many. Drupes globose. 6-10 mm across, glabrous, purple when ripe.

Fl. & Fr.: April-February.


Shrubs or small trees, 8–15 m tall. Leaves lanceolate or ovate-lanceolate, 6–16 x 4.5 cm, base narrowed or rounded, acute or acuminate at apex, sharply serrate along margins, thinly coriaceous, glabrous on both surfaces, 3-nerved from base; petioles 1 cm long; stipules linear. Flowers in axillary umbellate cymes, 2–3 cm across, greenish-white; sepals 5, lanceolate, 9–15 mm long, stellately tomentose; petals 5, ovate-obovate; 3–4 mm long, stamens many, yellow; ovary villous, ovoid. Drupes globose, 5–12 mm across, 2-lobed, black, glabrous, each with 2 nuts, wrinkled.

Fl. & Fr.: April-March.

Common in moist evergreen or deciduous forests. Sairep, Deb 31414; on way to Bukpui, D.K. Singh 93012; Kawilkul-Pulio basti Road, K.P. Singh 94474; Keifung, M. Sawmliana 99244.

4. **TRIUMFETTA** L.

1a. Basal leaves usually 3-lobed; spines on capsules glabrous

1b. Basal leaves not lobed; spines on capsules pubescent or tomentose, either straight or uncinate

2a. Leaves thinly tomentose beneath; spines uncinate

2b. Leaves densely tomentose beneath; spines straight

...2. _T. rhomboidea_

...1. _T. pinnata_

...3. _T. tomentosa_

Fig. 49.

Herbs with a woody base and hispid stems, 1(2) m high; branchlets densely hispid and rusty tormentose. Leaves variable, basal ones sometimes lobed, upper ones oblong, ovate or elliptic-lanceolate, 6-12 x 1.5-6 cm, base cordate or rounded, 3-5 nerved, acuminate at apex, unequally serrate along margins, coriaceous, pubescent above, densely tormentose beneath; petioles 1-3 cm long; stipules linear-lanceolate. Flowers 4-5, ca 1 cm across, congested, in axillary or leaf-opposed lateral cymes; sepals 5, oblong, 7-9 mm long, beaked, densely stellate pubescent; petals 5, oblong or obovate, 6-7 mm long, yellow, ciliate at base, dentate at apex, stamens ca 10, carpels 4. Capsules globose, 6-12 mm across, covered with spines; spines 5-8 mm long, hispid in the lower half, hooked at tip; seeds plano-convex, 2 mm long, dark brown to black.

*Fl. & Fr.:* Almost throughout the year.

Aizawl, *Deb* 30643; Bunglang, 100 m, *Deb* 31447; Champhai, K.P. Singh 94517; Kwakulhu-Tuichang, K.P. Singh 94420.


Suffruticose herbs, 0.5-2 m high. Leaves rhomboid-ovate, 2.4-5 x 1.5-3.5 cm, basal ones usually palmately 3-lobed, upper ones not lobed, base rounded to cuneate, acuminate at apex, irregularly serrate along margins, stellate-pubescent on both surfaces, 3-5 (7)-nerved from base; petioles 1-3 cm long, hairy; stipules subulate, hairy. Flowers 5-7 mm long, in terminal or extra axillary cymes; sepals narrowly oblong, 4-5 mm long, apiculate, stellate hairy; petals equal or shorter than sepals, yellow, oblong-lanceolate; stamens 10-15; carpels 2-3. Capsules globose, ca 4 mm across, albido-tomentose, hooked; spines uncinate, 1.5-2 mm long, glabrous.

*Fl. & Fr.:* August-January.

Fig. 49: Triumfetta pilosa Roth

Suffruticose herbs or undershrubs, up to 2 m high with strongly foetid hispid stem. Leaves ovate-lanceolate, 4-8 x 1.5-4 cm, base rounded or cordate, acuminate at apex, irregularly crenate-serrate, stellate hairy above, densely stellate-tomentose beneath, 3-5-nerved from base; petioles up to 3 cm long, tomentose; stipules lanceolate. Flowers 5-7 mm across, in extra axillary fascicles of cymes; sepals 4-5 mm long, apiculate, stellate hairy; petals orange-yellow, obtuse, 4-5 mm long; stamens 5-7; carpels globose, hispid. Capsules globose, 5-8 mm across, covered with straight 4-6 mm long, pilose spines.

*Fl. & Fr.:* June-December.

Common in plantations. Thenzawl-Buangpui Road, K.P. Singh 93837; Keifang, M. Sawmliana 95582.

**ELAEOCARPACEAE**

*(K.P. Singh)*

**ELAEOCARPUS L.**

1a. Anthers awned at apex:

2a. Leaves oblanceolate or obovate, 15-30 cm long; flowers large; petals narrowed towards base ... *E. aristatus*

2b. Leaves oblong-lanceolate or oblong-elliptic, 5-18 cm long; flowers smaller; petals broader towards base:

3a. Leaves 5-10 x 2.5-4 cm; racemes lax; flowers less than 1 cm across ... *E. prunifolius*

3b. Leaves 12-18 x 4-8 cm; racemes dense; flowers more than 1 cm across ... *E. varunus*

1b. Anthers not awned at apex:

4a. Leaves lanceolate or elliptic-lanceolate; petioles up to 2 cm long ... *E. lanceifolius*
Fig. 50: *Triumfetta tomentosa* Bojer
4b. Leaves broadly ovate, ovate-oblong, or ovate-elliptic; petioles 2-6 cm long;

5a. Petals ciliate

5b. Petals ciliate:

6a. Leaves postulate when dry, crowded near the apices of branchlets; pyrenes faintly rugose

6b. Leaves not postulate when dry, not crowded at the apices of branchlets; pyrenes strongly postulate

...5. *E. serratus*

...2. *E. floribundus*

...6. *E. tectorius*

1. **Elaeocarpus aristatus** Roxb. [Hort. Beng. 43; (1814), *nom. nud*]

Large trees, 20-40 m tall with conical crown; stems buttressed at base. Leaves crowded near the ends of branchlets, oblanceolate or obovate, 15-30 x 4-10 cm, base cuneate, acute or subacute at apex, minutely serrulate or subentire along margins, coriaceous, glabrous; lateral nerves 12-18-paired, obliquely arching; petioles 2-4.5 cm long, swollen or broader at both ends; stipules subulate, caducous. Racemes axillary on fallen leaf ends, 10-18 cm long; flowers ca 2 cm across, fragrant, white, drooping; sepals obovong, 10-15 mm long, 5-angled; petals 12-16 mm long, dull white, silky hairy outside; stamens many, subulate; ovary ovoid, hairy, 2-loculed. Drupes ellipsoid; 3-4 cm long; pyrenes pointed at both ends, compressed, oblong, rugose, 1-loculed.

*Fl.* & *Fr.*: April-October.

In moist evergreen places at an alt. of 1500 m. Lungleh, *Dutta* 33440.


Tall trees, 20-30 m with buttressed stems. Leaves ovate elliptic, 7.5-18 x 4-8 cm, base cuneate, acute to bluntly acuminate at apex, coarsely serrate, glabrous, subcoriaceous, glandular punctate beneath, postulate when
dry; petioles 3.5-5 cm long, swollen with a pair of small glands at apex. Racemes axillary, 10-15 cm long; flowers 5-8 mm across, white; sepals 5-6 mm long, lanceolate, tomentose at the margins, ciliate; petals ca 5 mm long, irregularly lanciate with filiform processes, ciliate along margins; anthers bearded, not awned, oblong; ovary villous, 3-loculed. Drupes oblong, pyriform, 2.5-4.0 cm long, light green, rounded at both ends, fleshy; pyrenes 1-3-loculed; locules 1-seeded, terete, tapering at both ends, rugulose to nearly smooth.

Fl. & Fr.: March-December;

In moist evergreen forests. South Vanlaiphai, Dutta 34042; Aizawl. Godfrey 530 (CAL).

Uses: Fruits are eaten, cooked or pickled.


Trees, 5-15 m tall with dense crown; young twigs pubescent. Leaves lanceolate or elliptic-lanceolate, 5-15 x 2-5 cm, base cuneate, acuminate at apex, distantly crenate-serrate, coriaceous, glabrous or sparsely pubescent beneath; lateral nerves 6-8-paired; petioles 7-15 mm long. Racemes axillary, 5-9 cm long; flowers 8-12 mm across; white; sepals oblong-lanceolate, 3-5 mm long, petals 3-6 mm long, lacinate, margins ciliate; anthers with short bristles above; ovary villous, 3-loculed. Drupes ovoid-ellipsoid, ca 2.5 x 2 cm; pyrenes oblong, rugose with 3 longitudinal grooves, 1-locular, 1-seeded.

Fl. & Fr.: March-December

Scarce, in evergreen forests. On way to Phongphui, K.P. Singh 96808.

Fig. 51: Elaeocarpus lanceifolius Roxb.
Medium sized trees. 5-20 m tall with lax crown. Leaves oblong-lanceolate to elliptic lanceolate, 5-10 × 2.5-4 cm, base cuneate, acute to acuminate at apex, crenate-serrate or subentire along margins, glabrous, coriaceous, shining above; lateral nerves 6-10-paired; petioles 1-3 cm long. Racemes axillary, 4-9 cm long, crowded at apex, suberect, puberulous. Flowers 7-10 mm across, white to pale yellowish-green; sepals 5-7 mm long, pubescent within, distinctly pouched at base within; petals oblong, 6-8 mm long, laciniate with 6-8, short segments at the apex, silky; anthers with short awns; ovary ovoid. Drupes oblong-ovoid, ca 2 cm long, pyrenes ovoid, ca 1 cm long, 3-angled, slightly rugose.

Fl. & Fr.: February-October.

Laki 1500 m, Parry 99 (fide C.E.C. Fischer, l.c.).


Trees, up to 30 m tall. Leaves oblong, obovate or elliptic, 6-12 × 2.5-6 cm, base cuneate, acuminate at apex, serrate-crenate along margins, coriaceous, glabrous; petioles 2-3 cm long, glandular pubescent. Racemes axillary, in clusters, 6-10 cm long, drooping; flowers ca 1.5 cm across, creamy white, fragrant; sepals lanceolate, pubescent, pink to red; petals obovate, 6-8 mm long, laciniate, eciliate, occasionally pustulate at base; stamens ca 35, apex pubescent, bearded; ovary 2-3-loculed, pilose. Drupes ca 4 × 2.5 cm, obovoid, greenish yellow; pyrenes oblong, 2.5 cm long, rugose, 1-2-seeded.

Fl. & Fr.: April-October.

In moist evergreen forests. Lungleh, Dutta 33364; Thalthlang, Dutta 33991.

Large trees, 15–35 m tall with oval crown; branchlets pubescent. Leaves ovate-oblong to ovate-lanceolate, 10–20 x 5–9 cm, base broadly rounded or obtuse, acuminate at apex, serrate-repand along margins, glabrous above, rusty tomentose beneath, pinkish brown when young, coriaceous; lateral nerves 10–12 pairs; petioles 2–5 cm long, often with 2 glands near apex, glabrous. Racemes axillary, 6–12 cm long, pubescent. Flowers 8–10 mm across, white, fragrant; sepals lanceolate, 5–6 mm long, puberulous inside; petals 5–7 mm long, laciniate at apex, ciliate along margins; stamens 40, one of them bearded; disc 5-lobed, silky, ovary 3-loculed, oblong. Drupes ellipsoid or oblong-ovoid 2–5 cm long, greenish-yellow; pyrenes 2-3-locular, oblong, with 2 longitudinal grooves, rugose, 1-seeded.

Fl. & Fr.: April–October.

In moist evergreen forests, Lushai hills, Chakramuva, Wenger 21514; Kolasib, K.P. Singh 93300.


Large trees, 15–25 m tall with large spreading crown, branchlets silky pubescent. Leaves oblong-lanceolate to oblong-elliptic, 12–18 x 4–8 cm, base rounded, acuminate at apex, cuspidately crenate-serrate along margins, coriaceous, grey-silky when young, glabrous above, sparsely pubescent on nerves beneath; glabrescent; petioles 3–5 cm long, geniculate at apex. Racemes crowded, axillary, pubescent; flowers ca 1.5 cm across, white; sepals lanceolate, 5–7 mm long, densely silky outside; petals oblong; 4–6 mm long, shortly laciniate; stamens many, anthers shortly awned; disc orange-red, 10-lobed; ovary ovoid-oblong, villous. Drupes oblong, ca 2 cm long, green, rounded at both ends; pyrenes pointed at base, 3-grooved, hirsute, unilocular.

Fl. & Fr.: February–October.

Recorded on the basis of C.E.C. Fischer (l.c.).
MALPIGHIACEAE

(K.P. Singh)

1a. Flowers zygomorphic; calyx glabrate, style 1 or rarely 2; samaras produced into 3 unequal wings

... 2. Hipsage

1b. Flowers actinomorphic, calyx glabrous; styles 3; samaras broadly winged all round

... 1. Aspidopterys


Woody climbers, young parts finally becoming glabrescent. Leaves opposite, elliptic or elliptic-lanceolate to ovate, 4-10 x 1-4.5 cm, rounded or obtuse at base, acuminate at apex, entire along margins, glabrous, membranous; lateral nerves 4-7-paired, petioles 5-10 mm long. Panicles rusty tomentose, axillary and terminal, lax; panicle branches verticillate; flowers 2 mm across; calyx lobes oblong-elliptic, ca 1 mm long, hairy or glabrous; petals oblong-elliptic, ca 2-6 mm long, white; ovary pilose, 3-celled. Samaras with wings ovate-oblong or ovate-lanceolate, 3.5-4.5 x 1-2 cm, rounded and narrowed upwards, membranous, pale brown, finely veined.

Fl. & Fr.: May-October.

Common. Thaltiang to Vanlaiphai, Dutta 34022, 30724.

Fig. 52: Aspidopterys glabriuscula (Wallich) A. Juss.

Climbers; young shoots silky tomentose. Leaves broadly orbicular, ovate, 7-18 x 5-11 cm, base rounded, acuminate at apex, glabrous above, silky adpressed-pubescent beneath; petioles 3-5 cm long; lateral nerves 5-6 pairs. Flowers in lax, axillary or terminal, panicles, 5-7 mm across; calyx 0.5-1 mm long, obtuse, glabrous; petals oblong-elliptic, 2-3 mm long, white; ovary silky. Samaras 2-4 x 1.5-2.5 cm; wings elliptic-ovate, reticulate, adpressed pubescent on both sides, translucent, brown.

_Fl. & Fr._: May-October.

Mizo hills, Theiriat, Deb 31328 (CAL).

2. HIPTAGE Gaertner

1a. Leaves linear-elliptic; petals subdentate
to denticulate at margins; samaras acrinate

1b. Leaves oblong to ovate lanceolate; petals fimbriate at
margins; samaras cristate

... 2. _H. jacquini_

... 1. _H. benghalensis_


Evergreen, scendent woody shrubs; young parts ± silky pubescent. Leaves oblong to ovate-lanceolate, 8-12 x 4.5-6 cm, base acute to rounded, acuminate at apex, entire to wavy along margins, glabrous; lateral nerves prominent, 6-7-paired; petioles 4-6 mm long. Flowers in terminal or axillary, 10-15 cm long, racemes, white, 1.5-3 cm across, fragrant; calyx 5-lobed with a large gland outside; lobes silky, ovate or elliptic, ca. 1 cm long; petals unequal, obovate, ca. 1 cm long, fimbriate on margins, hairy outside; stamens cominate at base. Samaras unequally 3-winged; middle wing linear-oblong 3-6 x 1-2 cm, with rounded apex; lateral wings oblong, 2-3 x 1-1.5 cm; dorsal cristate, ca. 1 cm long.
Fig. 53: Hiptage benghalensis (L.) Kurz
In Primary forests. Lushai hills, s.loc. s.num., Prazer 1980 (CAL).


Scandent shrubs; branches glabrous. Leaves linear-elliptic, 5-9 x 1.8-3.5 cm, base acute, acuminate at apex, glabrous, shiny; petioles 4-5 mm long; lateral nerves 4-6-paired. Panicles axillary or terminal; peduncles 4-9 cm long, white, tomentose; flowers ca 1-1.5 cm across; sepals 1.5-2 mm long with a calyccinal gland; petals denticulate, ca 1 cm long. Samaras 3-winged, pale brown, wings unequal; middle wing elliptic or ob lanceolate, 2.5-4 x 0.5-1 cm, subacute or rounded at apices, glabrous; lateral wings obovate, 1.5-2 x 0.7-0.8 cm.

*Fl. & Fr.:* March-May.

Endemic. Acor forest, Lungle. Gage 146 (CAL); s.loc. s.num., Parry (CAL).

Gage’s above specimen was earlier identified as variety of *Hiptage acuminata* Wallich ex A. Juss. by C.E.C. Fischer (1938).

**GERANIACEAE**

(K.P. Singh)

**GERANIUM L.**


Perennial, sprawling to decumbent herbs, 8-35 cm high, hairy or villous. Leaves orbicular, 1.5-5 cm across, palmately divided into 3-5, ovate or rhombic lobes, brownish above, dark green-purple beneath; lobes unequally toothed, pubescent; petioles 10-30 mm long, shorter in upper leaves, pubescent; stipules linear-lanceolate, 4-8 mm long. Flowers solitary or paired, on 1-5 cm long, axillary peduncles, 5-10 mm across, pale purple with 3 dark maroon stripes inside; sepals silky, 4-5 mm long; petals 6-8 mm long; anthers violet blue. Capsules ellipsoidal to subglobose, 12-15 x 2-3 mm, hairy, 5-lobed; mericarps ca 3 mm long.
Fl. & Fr.: May-October.

Hmuislang, 1500 m, Parry 263 (fide C.E.C. Fischer, l.c.)

OXALIDACEAE

(K.P. Singh)

1a. Leaves trifoliate; valves of capsules attached to the central axis

1b. Leaves pinnate, many foliolate; capsules dehiscing to 5-rayed star without leaving a central axis

... 1. Biophytum


Annual herbs, stems 6-15 cm long, erect, pubescent. Leaves evenly pinnate, 10-20 in a whorl at the apex of stem; leaflets 6-12 pairs, terminal ones largest, obovate, 6-12 x 4-6 mm, base oblique, apiculate at apex, glabrous; lower ones oblong; petals 1-2 cm long. Penduncles 3-8 cm long, glandular-hairy, 4-8-flowered in umbels; sepals ovate-lanceolate, 2-4 mm long; petals yellow, elliptic, 6-8 mm long. Capsules ovoid or oblong, 2-3 x ca. 2 mm, with gland tipped hairs.

Fl. & Fr.: July-December.

Common along river banks and way side. S.num. Wenger (fide C.E.C. Fischer, l.c.); 60 miles South of Lungleh. Wenger 318 (fide C.E.C. Fischer, l.c.).

Annual herbs, stems 15-30 cm long, erect, hispidly pubescent. Leaves 8-12 cm long, whorled at the top of the stem; leaflets 6-15 pairs, opposite, variable in size, oblong, 7-13 x 3-6 mm, nearly straight, base equal except terminal one which is obovate and with very oblique base, apiculate at apex, glabrous, size increasing towards apex; petioles 1-1.5 cm long. Penduncles 5-15 cm long, hispid; flowers yellow; sepals ova-lanceolate, 4-6 x ca 1 mm, much exceeding infront, grooved, glandular hispid; petals lanceolate, 3-7 x 1-2 mm. Capsules elliptic, 2-3 mm long, shining; locules 2-5 seeded; seeds few with distinct ridges, not tubercled.

Fl. & Fr.: August-January.

Common in moist places. Lawngtalai-Saiha, Dutta 33800.

2. OXALIS L.

1a. Plants aculecent with prostrate stems; petioles 2-6 cm long; flowers yellow ... O. corniculata

1b. Plants aculecent with an underground bulbous root stock; petioles 8-20 cm long; flowers pinkish ... O. acymbosa


Perennial herbs; stems prostrate, up to 30 cm long, rooting at nodes with erect, pubescent or puberulous branches. Leaves palmately 3-foliolate; leaflets obovate, 3-12 x 7-12 mm, base cuneate or acute; lobes rounded, glabrous to sericeous above, pale to glaucous beneath, entire along margins, chartaceous; petioles 2-6 cm long, pubescent; stipules adnate to petiole, ca 2 mm long. Inflorescence cymose to pseudo-umbellate; peduncles 3-10 cm long, axillary, flowers ca 8 mm across, yellow; sepals 5, linear-elliptic, 4-5 x 1-1.5 mm; petals 5, obovate, 5-7 mm long, apex obtuse; stamens 10, united at base; ovary 5-celled. Capsules oblong-subcylindric, 10-20 x 2-2.5 mm, puberulous, 5-angled; seeds 5-10 per locule, dark brown, flattened-ovoid, 1-1.5 mm long, transversely ridged.
Fig. 54: Biophytum sensitivum (L.) DC.
Fl. & Fr.: Throughout the year.

Common on ground throughout the year. Lungleh, 900 m Gage 216 (CAL); Sakae Lui–Saikual, Leslie, 116 (CAL); Bunglang, Deb 31470; Lungleh-Sairep, Dutta 33491; Chummliang to Meboi, Dutta 33328; Lawngtalai-Kawlchaw, K.P. Singh 92849; Darzo, D.K. Singh 93999; Sairep, K.P. Singh 96701.


Acaulescent, perennial herbs with underground bulbous rootstocks: bulbs globose, 1-2.5 cm across, scaly. Leaves 9-12, 3-foliolate; petioles 8-20 cm long, hairy; leaflets subsessile, 1-3 x 2-3.5 cm, cuneate at base, membranous, appressed hairy on both surfaces; lobes rounded and deeply notched at apex. Inflorescence pseudo-umbellate, 2-many-flowered; peduncles hairy, 5-20 cm long; flowers 1-1.5 x 0.8-1 cm; sepals 5, elliptic 3-5 mm long, with 2 narrow orange dots at apices; petals 5, violet, spatulate, 10-13 x ca 5 mm, hairy outside; stamens 10 in 2 series; ovary 5-angled, glabrous. Capsules not seen.

Fl. & Fr.: January-April.

Aizwal protected forest, Deb 30536; Lungleh-Sairep, Dutta 3349.

BALSAMINACEAE
(K.P. Singh & P.J. Bora)

IMPATIENS L.

1a. Flowers white or straw-coloured  ... 3. I. jaspica
1b. Flower colour otherwise:

2a. Leaves stipulate; stipular gland at base:

3a. Leaves usually alternate:

4a. Flowers yellow, streaked with pink; capsules glabrous  ... 6. I. lativagata
4b. Flowers rose-purple; capsules tormentose  ... 1. I. balsamina
3b. Leaves usually opposite or whorled:

5a. Flowers in compact terminal racemes or umbel-like; capsules beaked
   & I. glandulifera

5b. Flowers solitary or fascicled;
   capsules not beaked:

   6a. Leaves linear or oblanceolate,
       sessile or subsessile; seeds oblong
       ...2. I. chinensis

   6b. Leaves elliptic or ovate-lanceolate, stalked;
       seeds pyriform:

       7a. Lateral sepals ovate-lanceolate;
           standard semicircular
           ...10. I. trilobata

       7b. Lateral sepals linear-lanceolate;
           standard obcordate
           ...11. I. tripetala

2b. Leaves exstipulate:

   8a. Capsules turgid in the middle
       ...9. I. gyldenha

   8b. Capsules not turgid in the middle:

   9a. Spur of lip annular, wings rose-tinted
       ...13. I. lancepetala

   9b. Spur of lip not annular, curved or incurved;
       wings not rose-tinted:

       10a. Lateral sepals transparent,
            orbicular to ovate
            ...12. I. trepetaliflora

       10b. Lateral sepals not transparent,
            usually ovate to ovate-lanceolate:

       11a. Flowers solitary, violet-coloured;
            capsules fusiform
            ...8. I. puberula

       11b. Flowers 2-3 together, yellow or
            orange-yellow coloured; capsules
            not fusiform:

       12a. Leaves alternate; flowers orange-red
            or pale yellow; lateral sepals
            ovate-lanceolate, subacute;
            capsules tumentose
            ...7. I. porrecta

       12b. Leaves alternate or opposite;
            flowers bright yellow; lateral
            sepals long awned, uncinate;
            capsules usually glabrous
            ...3. I. drepanophora

A stout, succulent, annual herb, 30-70 cm high. Leaves variable in size, alternate, lanceolate, 8-13 x 1-3 cm, base narrowed, acuminate at apex, serrate along margins, glabrous; petioles 1.5-6 cm long, glandular. Flowers 2-2.5 cm across, axillary, solitary or in fascicles of 2-3, rose-purple or white; sepals small, broad, ovate; lip cymbiform, petaloid with yellowish blotch; spur filiform. Capsules ellipsoid-oblong, 3-14 x 4-6 mm, turgid in middle, narrowed at both ends, densely tomentose; seeds globose, black, reticulate.

*Fl. & Fr.*: March-October.

Common in moist places, usually near water sources. It is usually cultivated in the gardens. Lungleh-Sairep, *Dutta* 33514.


Erect annual herbs, 12-45 cm high; stem slender, angled, succulent, rooting at base. Leaves sessile or subsessile, opposite, linear or oblong-lanceolate, 2.5-5 x 0.3-1 cm, base ± rounded or subcordate, acute to acuminate at apex, serrate along margins, glabrous above, glaucous-white beneath. Flowers 1.5-2 cm across, axillary, solitary or 2-3 in fascicles, bright pink or reddish-white; pedicels 3.5-5 cm long; lip boat shaped; spur curved, 1.5-2 cm long, violet-red. Capsules ellipsoid, 10-20 x 3-6 mm, ± glabrous, turgid in middle; seeds black, many, oblong, smooth.

*Fl. & Fr.*: June-October.

Common along the river banks and road sides in humid places. Lushai hills, *Mrs Parry s.n.* (CAL); 60 miles South of Lungleh, *Wenger* 318 (*side C.E.C. Fischer, i.c.*); Champhai-Zote road, *K.P. Singh* 94583; North Vanlaiaphai *D.K. Singh* 99215.


Annual, glabrous, slender herbs, 20-55 cm high; stem base creeping. Leaves alternate or opposite, crowded towards apex, elliptic-ovate, lanceolate, 3-8 x 1.5-4.5 cm, base alternate, acute to bluntly acuminate at apex, serrulate along margins, glabrous above, white, glaucous beneath; petioles 2-5 mm long. Flowers 2-3 cm long, in long peduncled racemes, bright yellow; lateral sepals uncinate, 2-3 mm long; lip spurred, tubiflorous; spur filiform, 12-15 mm long. Capsules linear-ellipsoidal to fusiform, 15-20 x 3 mm; seeds oblong, glabrous, tuberculate.

Fl. & Fr.: June-September.

Common in humid places. Tuiraculmar, 1200 m, Parry 324 (fide C.E.C. Fischer, l.c.).


Annual, branched, glabrous, erect herbs, 1-2 m high; stems succulent, erect. Leaves variable in size, opposite-verticillate, elliptic-ovate or lanceolate, 4.5-15 x 2-6 cm, base cuneate to alternate, acuminate at apex, crenate serrate along margins, glabrous or finally pubescent; petioles glandular, 2-5 cm long. Flowers 2-3.5 cm long excluding spur in compact subterminal racemes or umbels, purplish-pink; lateral sepals 5-8 mm long; lip bell-shaped, spotted with yellow; 12-20 mm long, spur yellow, thin, incurved. Capsules broadly clavate, 5-15 x 3-8 mm, turgid in middle, drooping, beaked, glabrous; seeds obovoid, 3-4 mm long, grey, wrinkled.

Fl. & Fr.: July-September.

Common along the streams and damp places. Saiha Baulpui, Dutta 33863.

Undershrubs, erect, 0.5-2.5 m tall; stems branched, finely pubescent, woody below. Leaves alternate, ovate-elliptic to elliptic-lanceolate, 10-18 x 2-6 cm, base acute to cuneate and often oblique, caudate-acuminate at apex, crenate-serrate along margins and glandular-ciliate in crenations, pubescent on both sides; petioles 2-5 cm long, glandular, narrowly winged. Peduncles 5-14 cm long, 1-3-flowered, axillary; Flowers 4-5 cm long, white or straw-coloured, or pinkish-red. Lip large, saccate, navicular; spur short, coiled, obtuse. Capsules narrow, linear-clavate, 2-3.5 x 0.5-0.6 cm, glabrous; seeds many, suborbicular, tubercled.

*Fl. & Fr.*: June-December.


Erect, glabrous undershrubs, 0.5-1.2 m tall; stems branched, woody below. Leaves alternate, crowded at top of stem, elliptic or obovate-lanceolate, 7-19 x 2-5 cm, base obliquely cuneate, acute to caudate-acuminate at apex, distantly serrate along margins with ciliate or mucronate crenations; glabrous; petiole 1-3.5 cm long, glandular. Peduncles 1-2 cm long, 1-4-flowered; flowers 2-3 cm across, yellow, streaked with brown on the wings; lateral sepal large, orbicular; lip funnel-shaped, yellow, 2-3 cm long, narrowed into hooked spur. Capsules narrowly fusiform, ca 20 x 4 mm, turgid in middle, glabrous; seeds obovoid, smooth, glabrous.

*Fl. & Fr.*: July-December.

Common in shady moist places. *S.loc. Parry*, 1200 m, *s.num.* (*fide* C.E.C. Fischer, *l.c.*).

Slender herbs, 20-40 cm high; stems creeping below, glandular, hairy. Leaves alternate, ovate to lanceolate, 2-6 x 1.5-3 cm, base cuneate to slightly attenuate into petiole, acuminate at apex, serrate along margins, sparsely pubescent beneath; petioles 5-10 mm long. Peduncles axillary in terminal region, 2-3-flowered; flowers 2-2.5 cm across, orange-red or pale yellow with purplish nerves at throat; lateral sepals ovate lanceolate, hairy, white with red dots; lip ± navicular, narrowed into a long incurved spur. Capsules ellipsoid, 10-15 mm long, pubescent; seeds subglobose, puberulous.

Fl. & Fr.: July-December.

Scarce in moist places. Sairep-Aizawl road, Wenger 21520.


Erect slender, pubescent herbs, 60-100 cm high, sparingly branched. Leaves alternate, elliptic-lanceolate, 2.5-7 x 1.5-2.5 cm, attenuate at base, acuminate at apex, dentate-crenate along margins, pubescent above, lower surface white, eglandular; petioles short. Flowers solitary, 2-3 cm across, usually confined to the upper most axils, pubescent, reddish-violet; pedicels 2-3 cm long; lateral sepals broad, ovate-acuminate; lip concoidal, pinkish-white; spur ca 1 cm long, incurved. Capsules linear, 4-5 mm long, glabrous.

Fl. & Fr.: July-November.

Found only in one damp shady spot. 10 miles South-east of Lungleh, 1200 m, Wenger 328 (fide C.E.C. Fischer, l.c.).


Erect herbs, 10-35 cm high; stems nodose, usually simple. Leaves alternate, elliptic-lanceolate, 4-10 x 1-2 cm, base attenuate or cuneate, acuminate at apex, serrate-crinate along margins, glabrous on both surfaces; petioles 5-15 mm long, naked. Flowers 4-5 cm across, purplish-pink with red marks; peduncles 2-6 cm long, 1-2-flowered; lateral sepals 2, broad, 5-10 mm long; lip funnel-shaped, narrowed into a hooked spur;
spur sometimes spiral, curved. Capsules ellipsoid obtlong, 1.5-2 x ca 0.3 cm, glabrous, narrowed at both ends, turgid in middle; seeds many, subglobose, papillose.

Fl. & Fr.: July-December.

Common in shady places. Hinaifang 1500 m, Parry 34 (fide C.E.C. Fischer, i.e.); North Vanalaihpi, Parry 34 (fide C.E.C. Fischer, i.e.); Sialak, 1200 m, Parry 33 (fide C.E.C. Fischer, i.e.).


Erect, glabrous herbs, 30-60 cm high. Leaves opposite or whorled, elliptic or ovate-lanceolate, 6-13 x 1.5-4.5 cm, base cuneate to attenuate, acute to long acuminate at apex, crenate-serrate along margins, sparsely hairy above, petioles up to 5 cm long. Flowers solitary or in fascicles of 2-4 on 1.4 cm long peduncles, 15-25 mm across, purple-reddish, axillary; lateral sepals thickened at tips, 5-6 mm long; lip variable, saccate, sometimes conoid, curved or abruptly curved; spur abruptly curved. Capsules ellipsoid, 10-15 x 2-3 mm, glabrous, turgid in middle; seeds pyriform, glabrous.

Fl. & Fr.: June-September.

In moist places. Saiha-Bualpui, Dutta 33862.


Annual, erect, glabrous, branched herbs, 25-70 cm high; stems succulent, swollen at nodes. Leaves opposite or whorled, elliptic-lanceolate, 3-6 (10) x 1.5-2.5 (4.5) cm, base cuneate, acuminate at apex, crenate at margins, glabrous or sparsely pubescent above; petioles 1.5-2 cm long. Flowers axillary, 1-2 cm across excluding spur, solitary or fascicled, pinkish-purple; lateral sepals acuminate, ca 3 mm long, lip saccate, shortly abruptly spurred; spur curved. Capsules linear-ellipsoid, 10-15 x 0.3-0.4 mm, glabrous, turgid in middle; seeds many, pyriform, rough, granulose.
Fl. & Fr.: November-December.

In moist shady places. Taitaw, Dutta 33202; Sairep, Dutta 33542.


Annual, erect, glabrous herbs, up to 30 cm high with succulent stems. Leaves alternate, elliptic-obovate, 5-9 x 1-2.5 cm, slightly attenuate at base, acuminate at apex, crenate-serrate along margins, glabrous to puberulous above, glaucous beneath; petioles 5-15 mm long. Peduncles axillary, 2-3-flowered, succulent; flowers 18-22 mm across, bright orange-yellow with dull red tips; lateral sepals ovate, orbicular; basal lobe of wing mucous; lip funnel-shaped, narrowed into a stout incurved spur; spur constricted. Capsules linear, acute.

Fl. & Fr.: July-September.

North Vaulaiphai, 1500 m, Parry 376 (fide C.E.C. Fischer, i.c.).


Annual herbs, 30-40 cm high. Leaves alternate, elliptic-ovate or elliptic-lanceolate, 3-6 x 2.5-3.5 cm, attenuate into petiolate base, acuminate at apex, dentate-serrate along margins, densely tomentose on upper side, lower side white, sparsely tomentose specially on nerves; petioles 3-15 mm long. Flowers 1-2 on short peduncles, 2.5-3.5 cm across, including spur, binate, yellow; lateral sepals ovate, ca 1 cm long, lip navicular, spur ca 5 mm long, slightly curved, rounded, swollen at tip. Capsules linear, 2-4 cm long, glabrous, pendulous; seeds glabrous.

Fl. & Fr.: August-September.

S.loc., Wogor 209 (fide C.E.C. Fischer, i.c.).
AVERRHOACEAE


Small- medium trees, up to 12 m tall; stems irregularly fluted; branches drooping. Leaves imparipinnate, 10-30 cm long, extipulate; leaflets 5-11, subopposite, ovate-lanceolate or rhomboid, 2-7 x 1.5-4 cm, acute-acuminate at both ends, entire, membranous, glabrous above, glaucous and pubescent along the main and lateral nerves beneath; lateral nerves 4-10 pairs; petiolules very small, ca 2.5 mm long. Flowers small, variegated, white and purple in axillary or terminal panicles; sepals 5, red; petals 5, twisted; stamens 10, dimorphic; ovary elliptic. Fruits oblong, 7-12 x 5 cm, 3-5-angled.

Fl. & Fr.: May-August.


Uses: Fruits taken for jaundice, bleeding piles and as antiscorbutic.

RUTACEAE

(K.P. Singh)

1a. Leaves opposite:

2a. Leaves 1-foliolate; stamens 7-10; ovary obscurely lobed; fruits drupaceous

... 1. Aceronychia

2b. Leaves 2-7-foliolate; stamens 4-5; ovary deeply lobed; fruits follicular

... 11. Tetradium

1b. Leaves alternate or spiral:

3a. Plants armed:

4a. Petioles narrowly or distinctly winged:

5a. Leaves 1-foliolate; ovules many in each cell; fruits berry

... 5. Citrus

5b. Leaves 5-11-foliolate; ovules 1-2 in each cell; fruits capsular

... 13. Zanthoxylum
4b. Petioles not winged:

6a. Stamens up to 10; ovules 1-2 in each cell; fruits capsular or drupaceous:

7a. Leaves 1-foliolate; flowers bisexual; stamens 8-10 ... 10. Paramegryya

7b. Leaves 2-many foliolate; flowers polygamous; stamens 3-5:

8a. Leaves 3-foliolate; ovary entire; styles united; fruits drupaceous ... 13. Tectolalia

8b. Leaves pinnate; ovary deeply lobed; styles free; fruits capsular ... 13. Zanthoxylum

6b. Stamens numerous; ovules many in each cell; fruits berry:

9a. Leaves 1-foliolate; fruits with soft gland dotted rind ... 5. Citrus

9b. Leaves 3-foliolate; fruits with woody rind ... 2. Aegle

3b. Plants unarmed:

10a. Perennial herbs; fruits capsular of distinct carpels ... 4. Bremmungkea serrata

10b. Shrubs or trees; fruits berry:

11a. Leaves 1-foliolate ... 3. Aralantia

11b. Leaves more than one foliolute or imparipinnate:

12a. Leaves 3-5-foliolute; style short, persistent ... 7. Glycosmis

12b. Leaves imparipinnate; styles caducous, usually joined on the top of the ovary:

13a. Leaflets opposite; flowers in terminal or axillary cymes or racemes; ovary 4-celled ... 6. Clausena

13b. Leaflets alternate; flowers in terminal, corymbose panicles; ovary 2 or 5-celled:

14a. Petals valvate; styles and ovary pubescent, 5-celled; berries dry ... 8. Miconema

14b. Petals imbricate; styles and ovary glabrous, 2-celled; berries fleshy ... 9. Murraya
1. ACRONYCHIA J.R. & G. Forster


Shrubs or trees, 3-8 m tall, all parts glabrous. Leaves 1-foliate, opposite, very variable, 7-20 cm long; petioles 1-4 cm long, swollen at both ends; leaflets elliptic or oblanceolate to oblong-lanceolate, 6-14 x 2.5-6 cm, base acute or cuneate, obtusely acuminate at apex, quite entire along margins, glaucous green, glabrous, minutely pellucid dotted below; lateral nerves 10-12 pairs. Panicles axillary, corymbose; peduncles 4-6 cm long; flowers 8-12 mm across, white or yellowish-white, fragrant; calyx 4-lobed, lobes rounded; ca. 1 mm long, connate below, imbricate; petals 4, linear-oblong, 4.5 mm long, villous on inner side; stamens 8; ovary 1-celled. Drupes globose or obovoid, 1-1.5 x ca. 1.2 cm, 4-angled, beaked, glabrous to adpressed pubescent, green when ripe, black when dry; seeds 2 to 4, ovoid.

_Fl. _& Fr._: January-December.

Scarcely, on slopes of the hills in evergreen tropical forests. Kamthangpui- Kolasib, K.P. Singh 93212; Aizawl, M. Sawmiliana 95569; Mini-zoo, Bethlehem, Aizawl. 650 m. _M. Sawmiliana_ 101754.

2. AEGLE Correa


Large, deciduous, armed trees, up to 12 m tall; with oval crown; spines up to 2.5 cm long, erect, axillary. Leaves up to 18 cm long, alternate, trifoliolate or occasionally 5-foliolate; lateral ones smaller and shortly petiolulated or almost sessile; the terminal one large and long petiolulated; leaflets elliptic, ovate-lanceolate, 4-8 x 1.5-3 cm, terminal ones 10-13 x 5-
Fig. 55: Acronychia pedunculata (L.) Miq.
0.5 cm, base narrowed, cuneate, oblique, acuminated at apex, entire to subcuneulate along margins, glabrous. Flowers 2-2.5 cm across, greenish-white or yellowish, in lateral and subterminal panicles, sweet scented; calyx cupular, pubescent, obscurely 5-lobed; petals 4 or 5, oblong, 1-1.5 cm long, fleshy, deflexed glandular; stamens numerous in 2 or 3 series, basifixed; stigma club-shaped. Berries woody, globose, oblong or slightly pear-shaped, 5-15 cm across, grey or yellowish, 10-15 chambered, each chamber containing 6-10, oblong, woolly seeds embedded in a sweet, orange coloured, mucilaginous, slimy, edible pulp.


Common at lower elevations, usually cultivated. Bunglang 75 m. Deb 31418, 32421; Taitaw, Dutta 33243.

3. ATALANTIA Correa


Unarmed erect shrubs or small trees up to 5 m tall, with slender branches. Leaves 1-foliolate; petioles channelled, 5-10 mm long; leaflets variable, linear-lanceolate to elliptic, 7-10 x 2.5-4.5 cm, base narrower, obtuse or obtusely acuminate at apex, sometimes with a broad 2-lobed tip, wavy-entire along margins, glabrous, lower side pale dotted. Flowers in short, glabrous, axillary racemes, 0.5-0.6 cm across, white, fragrant; calyx sub-regularly 4-lobed, very small; petals 4, ovate-oblong; stamens 8, free, ovary 2-locular, sessile. Berry globose, 1-2 cm across, glandular.

Fl. & Fr.: March-December.

Lushai hills, between Changsia and Thunrumah Camp. J.C. Fraser s.num. (CAL).
4. **BOENNINGHAUSENIA** Reichb. ex Meissner


Perennial, woody, erect, branched herbs, 30–60 cm high; stems minutely tubercled, glabrous. Leaves bi- or tripinnate, imparipinnate, 6–10 cm long; leaflets subsessile, narrowly obovate or obcordate, (0.1) 1–2 x (0.2–0.3) 0.5–1.5 cm, terminal one largest, lateral ones smaller, base narrowed or cuneate, rounded or obuse at apex, entire, membranous, glabrous, glaucous beneath; petiolules obsolete, or ca 1 mm long in terminal leaflet. Inflorescence compound, in terminal leafy cymes, up to 20 cm long, many-flowered. Flowers white, drooping, 5–12 mm across; pedicels thin, slender, up to 5 mm long; calyx urceolate, ca 1 mm long, 4–5-lobed; petals 4, obovate, 5–6 mm long, obuse at apex; stamens 6–8; ovary 4-carpellate, stipitate, 3–5 lobed. Capsules 4–6 mm across, membranous, ventrally dehiscing into few-seeded carpels; seeds black, granulate, ovoid-ellipsoid, ca 1 mm long.

*Fl. & Fr.:* July–October.

Common in moist shady places. Lushai hills. *Parry s.n.* (CAL); s.l. loc. Leslie, 282 (CAL); Sairp, K.P. Singh 94156.

5. **CITRUS** L.

1a. Leaflets acute or acuminate at apex; berries globose without an apical knob; rind usually thin

   ...1. *C. indica*

1b. Leaflets obtuse or nearly so at apex; berries oblong

   with an apical knob; rind usually thick:

2a. Bushy shrubs or small trees, upto 5 m tall;

   leaves ± wingless

   ...2. *C. medica*

2b. Medium-large trees, up to 15 m tall;

   leaves broadly winged

   ...3. *C. micropumila* var. *anamensis*

Fig. 56: Citrus indica Tanaka
Small shrubs or trees, up to 5 m tall; branches terete, glabrous with 2-3 cm long spines. Leaves unifoliolate; petioles 8-15 mm long, wingless to narrowly winged or flat; leaflet blades oblong to lanceolate, 6-10 x 2.5-3.5 cm, base narrower, acute to acuminate at apex, usually entire along margins, rarely crenulate. Flowers solitary, rarely in pairs, white, axillary; calyx greenish-white, cupular, 4 or 5-lobed, glabrous; petals 5, oblong, 1-1.5 x 3-6 mm, gland dotted on outer side; stamens 22-25, pubescent, anthers yellow, introrse, 2-3 mm long. Fruits aromatic, spherical to globose, 2-3.5 cm across, smooth, gland dotted with thin rind, 8-11-locular, deep orange to scarlet red; mesocarp white, sweet; endocarp 8-11-segmented; pulp vesicle white; seeds 5-7 per fruit, suborbicular, ca 1.5 x 1 cm, flattened, ends pointed.

Fl. & Fr.: March-December.

Silalsuk, 900 m, Parry 78 (sève C.E.C. Fischer, l.c.); Saitual, M. Sawmliana 95547.


Bushy shrubs or small trees, 1-5 m high; spines erect, axillary, up to 3 cm long. Leaves unifoliolate; petioles 5-7 mm long, wingless or slightly winged or flat; leaf blades elliptic-ovate or oblong-lanceolate, 8-15 x 2-8 cm, base narrowed or cuneate, obtuse at apex, crenate-serrate along margins, glabrous. Inflorescence axillary, solitary or few-flowered racemes. Flowers sweet scented, 15-18 mm across, pink or purplish white; calyx 4-5-lobed, obconic, truncate; petals 4 or 5, oblancoate, 1.2-2.5 x 1 cm, gland dotted; stamens 20-40; filaments white to reddish, pubescent; ovary cylindrical, 12-14-locular. Fruits ovoid-oblong, 7-12 x 5-7 cm, mamillate at apex, yellow when ripe, aromatic with a thick spongy rind; pulp-vesicle present; seeds 20-30, ca 10 x 4 mm, smooth.

Fl. & Fr.: January-December.

Helio hills, N.E. of Lungleh, 1110 m, Gage 65 (C.A.L); Bunglang, Deb 31456; Thallang to South Vanlaiha, Dutta 34000; Near Sherchip, K.P. Singh 96609; Kawanpui, K.P. Singh 97037.
Uses: Fruits edible.


Medium to large trees, up to 15 m tall; branches spinous. Leaves unifoliate; petioles broadly winged; wings obcordate, oblong-obovate; leaflet blades ovate-elliptic, 4-7 x 3.5-5 cm, obtuse at base, obtuse or emarginate at apex, obscurely crenate along margins. Flowers white, in 2-10-flowered, glomerate, cymose inflorescence; calyx cupular, 4-5-lobed; lobes deltate, acute; petals 4-5, ovate; stamens 20-30, filaments free, white. Fruits oblate-pyrfiform, up to 9 x 12 cm, yellow, smooth, pitted or papillate with thick rind, 13-15 locular; mesocarp white; seeds 20-40, ovate-triangulate, pointed at tips.

*Fl.* & *Fr.*: March-January.

Dampui, 800 m. *M. Samliiana* 107438.

Uses: Fruits are edible.

CULTIVATED TAXA


A native of South China and Indo-China, frequently cultivated throughout India including Mizoram.


Cultivated for its delicious fruits.


Probably a native of South China or Indo-China, the sweet orange is widely cultivated for its esteemed fruits.
6. CLAUSENA Burn. f.

1a. Flowers axillary, raceme-like

1b. Flowers terminal:

2a. Leaves 7-11-foliate, leaflets usually equal, sometimes slightly oblique at base; ovary glabrous

2b. Leaves 13-30-foliate; leaflets strongly oblique at base; ovary ± hirsute or pilose

... 1. C. anisata var. paniculata

... 2. C. excavata

... 3. C. hepaphylla

1. Clausena anisata (Wild.) Hook. f. ex Benth. var. paniculata


Fig. 57.

Shrubs or small trees, up to 5 m tall, glabrous, young parts tomentose. Leaves 15-30 cm long, 5-15-foliate or sometimes more, imparipinnate; leaflets alternate, obliquely ovate-oblong or ovate-lanceolate, 4-10 x 2-4 cm, obtuse, caudate-acuminate at apex, glandular crenulate along margins, membranous, young ones tomentose, older ones glabrous; petiolules up to 5 mm long. Racemes axillary in the upper portions of branches, glabrous or tomentose, 6-20 cm long; flowers 4-6 mm across, whitish, fragrant; calyx ovate-deltate, ca 1 mm long, glandular, glabrescent or ciliolate; petals oblong, 2-5 mm long, concave, glabrous; stamens 8; gynophore ca 1 mm long; ovary stipitate, 4-locular, oblong, glandular-tuberculate. Berries globose, 6-20 mm across, purplish-orange when ripe, pellucid; seeds solitary, ovoid, compressed.

Fl. & Fr.: February-August.

Common in evergreen forests. Lushai hills, Parry s.n. (CAL); valley near Fort Lungleh, 900 m, Gage 46 (CAL); Mizo hills, Dutta 33595; Phelawn forest, K.P. Singh 97053.
Fig. 57: Clausena anisata (Willd.) Hook. f. ex Benth. var. pancijuga (Kurz) J.P. Molino

Evergreen shrubs or small trees, 3-5 m tall; young parts softly tomentose. Leaves 13-25 (35)-foliulate, 15-30 cm long, unipinnate with tomentose, terete, 15-25 cm long petiole and rachis; leaflets lanceolate or oblong to lanceolate, 2-8 x 1.2-3 cm, base oblique, acuminate at apex, entire to obscurely crenate or waved along margins, membranous, softly tomentose on both surfaces especially on nerves beneath, sometimes glabrescent above; petiolules 1-2 mm long, tomentose. Panicles terminal, 12-25 cm long, tawny hirsute or softly tomentose; flowers in cymes, 3-5 mm across, tetramerous, dull white; sepals 4, ovate, ca 1 mm long, acute; petals broadly elliptic, ca 3 mm long, obtuse, glabrous; stamens 8; gynophore hourglass-shaped; ovary 4-locular, tawny hirsute. Berries ovoid to oblong, 8-15 x 4-8 mm, pink when mature, glandular-punctate, 1-2-seeded, crowned with a short style; seeds oblong.

*Fl. & Fr.*: March-October.

Scarcely, on roadside ridges in tropical moist forests. Kawnpui, K.I. Singh 93274.

*Uses*: Leaves and twigs are used as spices.


Bushy shrubs or small trees, up to 5 m high. Leaves 15-35 cm long, unipinnate, 7-11-foliolate; leaflets elliptic-lanceolate, 5-16 x 1-6 cm, equal or obliquely acute at base, acute to acuminate at apex, entire to crenulate along margins with uniseriate-glands, glabrous, puberulous on nerves beneath, profusely gland-dotted; lateral nerves 6-8 pairs. Panicles terminal or axillary, corymbose, 2.5-10 cm long, di- or trichotomously branched; flowers ca 3 mm across, white or greenish-yellow; sepals 4(5), ca 1 mm long, ciliolate; petals oblong, 3-4 mm long, stamens 8; gynophore distinct;
Fig. 58: *Clausena heptaphylla* (Roxb.) Wight & Am. ex Steudel
ovary 4-locular. Berries oblong-ovoid or ellipsoid, 7-14 x 4-6 mm, orange or red when ripe; glandular pitted, 1-seeded; seeds ovoid.

Fl. & Fr.: February-August.

Common in shady places. Tipaimukh, Kanjilal 4779; Lawngtulai-Saiha, Dutta 33792; Riang, D.K. Singh 92954; Bukpui, D.K. Singh 93016; Tithleng, K.P. Singh 96631; Kawnpui, K.P. Singh 97047.

Uses: Leaves chewed with betel leaves, have a pleasant taste and also used by Lakher as febrifuge.

7. GLYCOSMIS Correa

1a. Leaflets entire along margins; inflorescence 2-4 cm long; stamens subequal; berries ellipsoid, purple-bluish when ripe, outer rind smooth or pitted ... 1. G. cyanocarpa

1b. Leaflets crenulate along margins; inflorescence 4-10 cm long; stamens equal; berries globular, creamy-white or salmon-redish when ripe, outer rind mamillate ... 2. G. pumaphylla


Evergreen shrubs or small trees, 3-8 m tall, glabrous. Leaves very variable, imparipinnate, up to 35 cm long, 3-5-foliolate; rachis 6-12 cm long; leaflets ovate-elliptic to oblong-lanceolate or linear-lanceolate, 5-15 x 0.5-6 cm, base acute to cuneate, acute or bluntish acuminate at apex, entire along margins, coriaceous or chartaceous, glabrous; petiolules 2-3 mm long; lateral nerves 7-12 pairs. Cymes axillary or terminal, 2-4 cm long; flowers 2-5 mm across, white; calyx 4 or 5-lobed, lobes suborbicular; ca 1 mm long, petals 4 or 5, obovate, glandular. Berries glandular, obovoid-oblong, 10-12 x 8-10 mm, smooth, blue; seeds solitary, pitted.

1a. Leaflets broad, cAudate-acuminate at apex, 5-15 x 2.5-6 cm ... 1.1 var. cymosa

1b. Leaflets narrow, tapering at both ends, 5-8 x 0.5-1 cm ... 1.2 var. linearifolia


Fig. 59.
Fig. 59: Glycosmis cyanocarpa (Blume) Spreng. var. cymosa Kurz
Fl. & Fr.: September-May.

Darlak, Deb 3411; Kheirum, 1000 m, Deb 31230; Theiri, Deb 31355; Sabual, 1000 m, D.K. Singh 99033.


Fl. & Fr.: February-August.

In primary forests, at 1000 m. Lushai hills, Changsil, Prazer 1890. s.n. (CAL). Endemic to N.E. India.


Shrubs or small trees, up to 6 m tall; branchlets glabrescent at maturity. Leaves pinnately 3-5-foliolate; rachis 3-7 cm long; leaflets opposite-alternate, oblongate, elliptic-lanceolate, 9-15 x 3.5-6 cm, base cuneate obtusely to acute, apiculate or obtusely acuminate at apex, crenulate-dentate along margins, chartaceous, glossy, glabrous; petiolules 1-3 mm long; lateral veins 8-16-paired. Panicles or cymes 4-10 cm long, rusty pubescent, axillary-terminal; flowers in dense clusters, 2-4 cm across, white; sepals 5, ca 1 mm long, imbricate, margins ciliate; petals 5, imbricate, lanceolate, 3-4.5 x 2-3 mm, creamy white, glabrous, recurved; stamens 10; ovary ovoid-cylindrical Berries globose, 5-10 mm in diam., pinkish when ripe, mammillate, 1-seeded.

Fl. & Fr.: February-December.

Common in evergreen forests. Lungleh, 900 m, Gage 80 (CAL).
8. MICROMELUM Blume


Evergreen shrubs or small trees, 2-10 m tall; young parts densely puberulous. Leaves 12-40 cm long; leaflets 7-15, alternate, sub-opposite, obliquely ovate-lanceolate or oblance-lanceolate, 5-18 x 2-6.5 cm, base cuneate, oblique, long acuminate at apex, entire to wavy or crenulate along margins, greenish glabrous above, tomentose or pubescent along the nerves beneath, gland dotted; lateral nerves 8-15-paired; petiolules 3-4 mm long. Corms terminal, or from the axil of upper most leaf, up to 20 cm long. Divericate or crowded, tawny appressed-pubescent; flowers 7-10 mm long, dull white, fragrant; calyx small, 5-toothed; sepals ca. 0.5 mm long, glandular, pubescent outside; petals 5, rounded at tip, oblance, ca. 6 mm long, pubescent; stamens 10; ovary subglobose, ± hairy. Berries ellipsoid, 8-12 x 6-7 mm, orange or reddish-yellow when ripe; pellucid-punctate, shortly stipitate below, terminated by a stylar scar; seeds 2 or 3, compressed, bean-shaped.

*Fl. & Fr.* November-June.


9. MURRAYA Koenig *ex L.* nom. cons.

1a. Leaves with 15-27 leaflets; berries purple-black when ripe ... 1. *M. koenigii*

1b. Leaves with 3-7 leaflets; berries reddish when ripe ... 2. *M. paniculata*


Large shrubs, up to 4 m tall, branches puberulous or glabrous; bark dark brown. Leaves up to 45 cm long, 15-27 foliolate; leaflets ovate-lanceolate, 2-8 x 1-2.5 cm, oblique at base, obtusely acuminate-retuse at apex, glandular-crenulate along margins; petiolules up to 3 mm long; lateral nerves 4-10 pairs. Flowers many, white; in terminal, corymbose panicles; sepals 5, fused at base; petals 5, valvate, linear, 6.5-8 x 1-1.2 mm, obtuse, greenish white; stamens 10. Ovary 2-loculed, oblong-ovoid. Berries subglobose, ca 10 mm in diam., purplish-black when ripe; seeds 1-2, ovoid-oblong, green.

*Fl. & Fr.* March-July.

Recorded on the basis of L.K. Jha [Natural Resource Management. 1 (Mizoram), 1997].


Evergreen shrubs or small trees, 3-6 m tall, bark whitish grey. Leaves up to 20 cm long, 3-7-foliolate, rachis 4-8 cm long; leaflets alternate, varying in size, ovate, obovate or elliptic, obliquely rhomboid, 2-7.5 x 1.5-3 cm, acute to cuneate at base, obtusely acuminate, often notched at apex, irregularly crenulate-entire along margins, glabrous or minutely hairy along the mid rib on both sides, glossy; petiolules 3-4 mm long; lateral nerves 8-10-paired. Flowers few, in terminal or axillary corymbs, ± 2.5 cm long, white, fragrant; sepals 5, acute, ovate 0.5-1 mm long; petals 5, oblong-elliptic, 1.2-2 cm long; stamens 10, white; ovary glabrous, 2 or 3-locular, ovoid-ellipsoid. Berries ovoid-oblong, 1.0-1.5 cm long, narrowed at both ends, rugose, red or orange-red when ripe, 1-2 -seeded; seeds oblong, villous, hairy.

*Fl. & Fr.:* March-July.

Common in tropical, evergreen moist forests, also cultivated. Near Fort Lungleh, 900-1200 m. Gage 183 (CAL).
10. **PARAMIGNYA** Wight


Erect, evergreen, woody climbing shrubs with curved branches and 10-20 mm long, axillary, recurved spines. Leaves 1-foliolate; petioles 5-12 mm long; leaf blades elliptic-oblong, oval or oblong, sometimes elliptic-lanceolate, 6-12 x 2.5-4.5 cm, rounded at both ends, or shortly acuminate or abruptly acute at apex, entire or obscurely crenate, glabrous, pubescent on the midrib beneath, coriaceous, gland dotted; petiolules 10-12 mm long. Flowers in axillary eymes or sometimes solitary on tomentose pedicels, ca 20 mm across, bright orange, fragrant; calyx broadly 5-lobed, cup-shaped, ca 5 mm long; petals 4 or 5, oblong, 12-15 mm long, imbricate, glandular; stamens 8 or 10, free; ovary 3-5-celled, ovoid, pilose. Berries ovoid or obovate, ca 25 mm across, downy-pubescent, yellow to orange when ripe, 1-seeded; seeds compressed.

*Fl. & Fr.:* April-December.

North Vanlaiphai, Deb 31156; Vanrubak-Thalithlang, Dutta 33916.

11. **TETRADIUM** Lour.


Medium sized trees, 6-15 m tall; branchlets glabrous to occasionally pubescent. Leaves 30-60 cm long; rachis 6-10 cm long; leaflets 4-12, opposite, lanceolate or ovate, elliptic-oblong or elliptic, 5-18 x 3-7.5 cm, base acute to rounded, sometimes oblique, acuminate at apex, glandular-crenulate along margins, chartaceous to subcoriaceous, glabrous or puberulent, conspicuously oil dotted, marginal oil dots larger than those scattered elsewhere on the lamina; petiolules obsolete to 5 mm long in lateral leaflets; lateral nerves 12-22-paired. Panicles large, corymbose,
Fig. 60: Tetradium fraxinifolium (Hook.) T.G. Hartley
terminal from the axils of the uppermost leaves; flowers tetramerous, unisexual, 10-12 mm across, greenish-white. Male flowers: sepals valvate, 1-1.5 mm long, pubescent to glabrous; petals valvate, 3-5 mm long, white to pale yellow to green. Female flowers: staminodes 4; ovary 4-carpellate, globose. Fruits follicular: follicles glabrous to sparsely hairy, compressed-subglobose, 6-15 mm across, connate towards base; seeds reddish to blackish, 2 per follicle, subtrigonic, 4-5 mm long, arillate.

Fl. & Fr.: May-December.

Chumliang, Dutta 33297; Phelawn forest, K.P. Singh 9/005; Rulechawn, M. Sawmliana 99243.

12. TODDALLA Juss.


Large, evergreen, scandent shrubs, up to 15 m tall; stems with numerous short, black, straight or curved prickles, also sometimes unarmed. Leaves digitately trifoliate, alternate; common petioles 4-5 cm long; leaflets sessile, variable, oblanceolate, oblong-elliptic, 6-10 x 2-4 cm, base narrowly or cuneate, bluntly long acuminate at apex, subentire to crenulate along margins, glabrous, pellicid pubescent, chartaceous; lateral nerves 10-12 paired. Cymes axillary or terminal, paniculate, up to 7 cm long; flowers white or yellowish white, 6-8 mm across, unisexual, calyx 5-lobed, ca 0.5 mm long, pubescent outside, glandular; petals oblanceolate, 2-3 mm long, hooded at apex, 2-6 x ca 1 mm. Male flowers with 5 stamens. Female flowers: staminodes absent, ovary 4-celled. Drupes obscurely 4-5 lobed or grooved, globose, 6-10 mm diam., beaked, reddish or orange when ripe, 1-seeded; seeds reniform, 2-3 x ca 1 mm, brownish.

Fl. & Fr.: September-August, ripens during May-June.

Common in open or evergreen forests. Hello hill, N.E. of Lunglei, 1010-1200 m, Gage 42, 102 (CAL); Aizawl, Deb 30544; Sialuk-Aizawl, Deb 30837; Sairang road, G.K. Deka, s.n.; Champhai-Myanmar border,
Fig. 61: Toddalia asiatica (L.) Lam.
13. ZANTHOXYLUM L.

1a. Petioles and rachis flat, winged; petals absent:

2a. Branchlets pubescent; cymes glomerate, dense, 1-1.5 cm long ...1. Z. acanthopodium

2b. Branchlets glabrous; cymes in lax panicles, 1-10 cm long ...2. Z. armatum

1b. Petioles and rachis wingless; petals present:

3a. Large trees; follicles solitary ...A. Z. rhedea

3b. Scandent shrubs; follicles 1-4:

4a. Leaflets 3-9; 6-13 cm long, base scarcely oblique ...3. Z. nitidum

4b. Leaflets 10-25, 2-5.5 cm long, base oblique ...5. Z. scandens


Shrubs or small trees, up to 6 m tall, with sharp, straight or curved, reddish brown prickles, ferruginous-pubescent. Leaves up to 20 cm long, 3-foiolate or imparipinnate; rachis flat and narrowly foliaceous, winged. 5-8 cm long; leaflets 3-15, opposite, elliptic-lanceolate or oblong, 3-7 x 1-2.5 cm, smaller downwards, base rounded or cuneate, acute or acuminate at apex, glandular, serrate along margins, glabrous, only nerves ferruginous-pubescent below, pellucid-punctate. Cymes paniculate, 1-1.5 cm long, dense, axillary, ferruginous-pubescent. Male flowers ca 3 mm long; perianth uni- or irregularly biseriate, segments 5-8, linear, yellowish; stamens 4-6, purplish; disc pulvinate. Female flowers ca 2 mm long, perianth and disc as in male flowers; ovary 2-5-carpellate. Follicles 2-5 with 4-1 or 0 caducous carpels; carpels obliquely globose, 3-4 mm across, pitted, compressed, reddish; seeds glossy, black, pitted, ca 3 mm across.

Fl. & Fr.: March-October.

Lungleh, Diaita 33465; Blue mountain, 2000 m, Mao 107148.
Fig. 62: Zanthoxylum acandernium DC.

Shrubs or small trees, up to 8 m tall with incurved reddish-brown prickles from broad base. Leaves 3-foliolate, up to 20 cm long, imparipinnate; petioles and rachis broadly winged; wings foliaceous, 2-4 mm long; leaflets 5-11, opposite, subsessile, elliptic to oblong-lanceolate, 3-8 x 1-3 cm, base acute to cuneate, acuminate to bluntly acuminate at apex, entire or obscurely glandular, serrulate along margins, glabrous, chartaceous, pellucid punctate beneath. Cymes terminal on short lateral branchlets, 4-10 cm long, paniculate, pubescent. Male flowers ca 0.5 mm long; perianth uni- or irregularly biseriate; segments 6-8, linear, yellowish; stamens 6-8. Female flowers: perianth similar to male flowers; ovary 1-3-carpellate, ovoid, unilocular with 2 ovules. Follicles 1-3 with 2, 1 or 0 abortive carpels, globose, free, reddish when ripe, tubercled; seeds glossy, black, ovoid, ca 3 mm across.

*Fl. & Fr.*: March-November.

Lushai hills, *Parry s.loc., s.num.* (CAL); Kawlkulh-IIIiapui, K.P. Singh 94327; Kawnpui, K.P. Singh 97028.


Large, evergreen, climbing shrubs with short, recurved, brownish, 2-4 mm long prickles; young parts tomentose or pubescent. Leaves 3-foliolate, 15-25 cm long, imparipinnate; petioles and rachis grooved; leaflets 3-9, ovate to oblong or elliptic, 6-13 x 3-6 cm, base subacute or rounded, scarcely oblique, abruptly or gradually long acuminate at apex, entire along margins, coriaceous, glossy on both side, glabrous above, pubescent along the midrib beneath, pellucid dotted; petiolules 2 mm long. Cymes panicked, 5-10 cm long, axillary. Male flowers 3-5 mm long, white, sepals 4, ca 1 mm long; petals 4, ovate, 2-3 mm long; stamens 4. Female flowers 2-3 mm long:
disc pulvinate; gynoecium 4-carpellate. Follicles 1-4, obliquely globose, 4-5 mm across, ± compressed, glabrous, apiculate, pitted, 1-seeded; seeds black, smooth, shiny, ca 5 mm across.

_Fl. & Fr._: February-October.

Scarce in the forests. Aizawl forest, _Deb_ 30544.


Large trees, 20-30 m tall; branches with straight to curved, sharp, conical, up to 5 mm long prickles. Leaves up to 60 cm long, clustered at the end of branchlets; leaflets 5-25, opposite, lower ones smaller, oblong-lanceolate, or oblanceolate, or oblong, unequal sided, 5-15 x 3-5.5 cm, base acute to cuneate, strongly oblique, caudate-acuminate at apex, quite entire to distinctly crenate along margins with glands in sinuses of crenations, glabrous and glossy above, glaucous beneath; petiolules 4-5 mm long. Cymes panicked, up to 18 cm long, crowded, subterminal and terminal. Male flowers 1.25 mm long, greenish yellow; sepals 4, minute, ovate triangular, green; petals 4, elliptic, 1-2 mm long, white or creamy yellow; stamens 4 with yellow anther; disc lobulate. Female flowers 1.5-2.5 mm long; ovary 1-carpellate. Follicles solitary, globose, 5-8 mm across, 2-valved, pitted, apiculate, 1-seeded; seeds bluish-black, glossy, globular 3-6 mm across.

_Fl. & Fr._: March-November.

Common in primary evergreen forests. Mizoram area, _s.loc. s.num._ Sharma 99209.


Scandent or climbing shrubs: branches prickly or sometimes unarmed, tomentose. Leaves imparipinnate, up to 25 cm long; petioles and rachis
slender, prickly; leaflets 10-25, ovate to elliptic-lanceolate, 2.5-5.5 x 1-2.5 cm, base acute to cuneate or oblique, cuneate at apex, entire to glandular-crenate along margins, glabrous, glossy above; petiolules ca 4 mm long. Cymes axillary and terminal, paniculate, up to 10 cm long. Male flowers ca 2 mm long; sepals 4, ovate, ciliolate; petals 4, ca 2 mm long; stamens 4 with yellowish anthers, extrose. Female flowers: gynoecium 2-4-carpellate. Follicles 1-4, subglobose-obovoid, ca 5 mm across; seeds black, shiny.

*Fl. & Fr.:* April-December.

In moist evergreen forests. Recorded on the basis of K.N. Nair & Nayar (*l.c.*).

**SIMAROUBACEAE**

*(K.P. Singh)*

1a. Stipules present, caducous; sepals and petals persistent in fruit
   
1b. Stipules absent; sepals and petals not persistent:
   
2a. Large trees, up to 50 m tall;
    leaves paripinnate; fruit a samara
    ...1. *Alangium*

2b. Shrubs or small trees, up to 4 m tall;
    leaves imparipinnate; fruits a nut
    ...2. *Brouea*

1. **AILANTHES** Desf., *nom. cons.*


Tall trees, up to 50 m. Leaves altate, paripinnate, 60-100 cm long; petioles up to 20 cm long; leaflets alternate, ovate or ovate-lanceolate, 6-18 x 3-9 cm, oblique-cuneate at base, acuminate at apex, entire-sinuate along margins, glabrous; lateral nerves 10-12 pairs. Flowers in 30-40 cm long panicles; calyx lobes 3-angled, pubescent; petals ca 4 mm long:
anthers ca 2 mm; ovary hairy; styles 5, connate; stigma spreading. Fruit a smara, apically twisted, rounded along outer margin, straight along the inner, up to 13 x 4 cm, light brown; seeds flat, up to 1.5 cm across.

*Fl. & Fr.: December–April.*

Dampui, 950 m. *M. Sawmliana* 107429.

*Uses:* Wood is used in construction work.

2. **BRUCEA J.F. Miller**


*Fig. 63.*

Shrubs or small trees, up to 4 m tall; young parts tomentose. Leaves alternate, 20-35 cm long with pubescent rachis, 3–9(13)-foliolate; leaflets opposite, ovate or oblong to ovate-lanceolate, 4–10 x 2–4 cm, size increasing upwards, base rounded or unequal, acuminate at apex, entire along margins; membranous, pubescent on both surfaces; lateral nerves 8–11 paired, petiolules up to 1 cm long. Flowers ca 3 mm across, in axillary, pubescent, 7–18 cm long paniculate cymes, greenish-white to creamy white or red; sepals 4, ca 1 mm long, imbricate; petals 4, linear; 1–2 mm long; stamens 4; ovary 4-lobed; glabrous. Nuts of 1–2 druplets, ovoid. 8–12 x 4–6 mm, pointed at the apex, orange-red when ripe; surface reticulated.

*Fl. & Fr.: November–May.*


3. **PICRASMA Blume**

Fig. 63: Brucea mollis Wallich ex Kurz
Medium sized trees, 10-16 m tall, bark thin, dark brown, + smooth. Leaves oblong-ovate or elliptic or obovate-oblong, 6-15 cm long, cuneate at base, abruptly acuminate at apex, entire to wavy along margins; petioles 1-5 cm long, leaflets 3-7, opposite, 5-12 x 2-5 cm, glabrous, lateral nerves 3-6 paired; petiolules 1-2 cm long; stipules broadly ovate-rounded at apex, acute at base, ca 1 cm long. Inflorescence axillary, cymose; panicles 3-10 cm long; bracts obovate, caducous. Flowers 4-merous, dull white; pedicels ca 1 mm long, villous, elongating in fruits; sepals triangular to ovate, ca 1 mm long, glabrous to puberulous, acute; petals ovate-oblong or oblong, 2-3 x 1-1.5 mm in male flowers, 3-5 x 2.5-3 mm in female flowers. Stamens 4, 2-5 mm long; filaments short, subulate, hairy; carpels 4. Fruits a drupe, 1-4, ovoid-subglobose, shining, black when ripe with persistent sepals and petals.

*Fl. & Fr.*: Throughout the year.


**BURSERACEAE**

(K.P. Singh)

1a. Leaves exstipulate; drupes ellipsoid-oblong or obovoid

1b. Leaves stipulate; drupes globose:

2a. Flowers terminal or at tips of branches; disc cup-shaped, adnate to the calyx tube

2b. Flowers in axillary panicles; disc annular, lining the base of calyx

3. *Protonium*

1. *CANARIUM L.*


Tall trees, up to 50 m, buttressed towards base; young branches densely ferruginous tomentose. Leaves exstipulate, 7-9 (-15)-jugate; rachis tomentose; leaflets elliptic-ovate to oblong-lanceolate, 6-15 (-30) x 4-13
cm, oblique, rounded or broadly cuneate at base, apex acuminate, subentire or denticulate-serrate along margins, glabrescent above, laxly pubescent-tomentose beneath; lateral nerves 10-15 pairs. Flowers in supra-axillary panicles, unisexual or bisexual, dull white-yellow with mango-like smell; panicles thyrsoid or racemose, densely ferruginous-fulvous tomentose; male 15-40 cm long; female 7-20 cm long; bracts caducous. Male flowers: calyx tube campanulate, 5-5.5 x 3-4 mm; lobes 3-angulate, brown pubescent outside; petals oblong-lanceolate, up to 8.5 x 4.5 mm; stamens 6-8 mm long, connate into a tube. Female flowers: calyx urceolate, up to 6 x 5 mm, pubescent outside; petals oblong-oblancoate, 8-8 x 4 mm; staminodes 3-4 mm long; filaments broad, connate into a cup; ovary and styles hairy; stigma capitate. Drupes oblong-ellipsoid, 4 x 2 cm, dark blue.

*Fl. & Fr.*: Throughout the year.

Recorded on the basis of J.H. Lahmunglingcha (Ethnobotany 11, 60, 1999).

*Uses*: Infusion of bark used for colic and tonsilitis; suspension of boiled bark used for curing skin eruptions; also a mosquito repellent.

2. **GARUGA** Roxb.

1a. Leaves pubescent; calyx deciduous;
drudes borne apically, 12-25 mm across

1b. Leaves glabrous at maturity, calyx persistent;
drudes borne apically, 5-10 mm across

... 2. *C. pinnata*

... 1. *G. floribunda* var. *gambei*


Large trees, up to 20 m tall with buttressed base; young parts puberulous. Leaves alternate, imparipinnate, 30-45 cm long; stipules caducous; petioles 6-8 cm long; leaflets 9-15, ovate-oblong or oblong-lanceolate, 8-15 x 2.5-3.5 cm, oblique-cuneate at base, acuminate at apex, serrate-crenate along margins, chartaceous, puberulous in young stages,
giabrous at maturity; pediciles ca 2 mm long or absent in some. Panicles on extremities of leafless branchlets, up to 20 cm long, glabrous-scabrous; flowers yellow or white, fragrant; calyx tube 5-fid, ca 1.5 mm long, campanulate, persistent, glabrous inside, pebrulous outside; petals 5, ovate, 3-4 mm long, pubescent; stamens 10. Drupes irregularly globose, 4-lobed, glabrous, 5-10 mm across, obuse at tip; pyrenes 4, 1-seeded.

Fl. & Fr.: February-September.

Rather common. West Phaileng, ca 600 m, M. Sawmiliana 101743.


Tall trees, up to 20 m tall; branchlets pubescent. Leaves up to 40 cm long, imparipinnate, crowded towards the ends of branches; petioles up to 5 cm long; leaflets 11-17, opposite, ovate-obovate, or oblanceolate, 6.5-12 × 1.5-3 cm, base oblique, cuneate or subacute, caudate-acuminate at apex, crenate-serrate along margins, subcoriaceous, pebrulous beneath; petioles up to 2 mm long; stipules falcate. Panicles branched, terminal, tomentose; flowers greenish-yellow, 0.5-0.8 cm long; calyx tube ca 4 mm long, 5-fid, broadly campanulate, valvate, tomentose; petals 5, linear-oblong, tomentose outside, 5-8 mm long; stamens 10, pubescent; ovary 5-celled, stipitate, ovoid, densely hairy. Drupes ± globose to oblong, horned, 1.2-2.5 cm across, yellowish-green, fleshy; pyrenes 2-3; seed 1 per pyrene.

Fl. & Fr.: March-November.

Near fort Lungleh, 600-900 m, Gage 274 (CAL).

Uses: Fruits edible.

2. Protiium Bum. f.

FLORA OF MIZORAM 329


Large trees, up to 20 m tall; young branches tomentose. Leaves alternate, up to 25 cm long, 5-7 (11) foliolate; rachis pubescent; leaflets ovate-oblong to oblong-lanceolate, 5-12 x 2-4 cm, base oblique or rounded, bluntly caudate at apex, oblique or entire to coarsely serrate along margins, coriaceous, glabrous above, pubescent beneath; lateral nerves 4-14 pairs; petiolules 1-1.5 cm long, swollen at both ends. Panicles lax, axillary or in axils of fallen leaves, up to 15 cm long. Flowers 2-3 mm across, green; calyx saucer-shaped, pubescent; petals pubescent, 5-lobed; stamens 10; disc annular; ovary hairy. Drupes globular, sometimes obscurely 2-3-turrowed, 1-2 cm across, red-pink, 1-3-seeded nuts; pulp edible.

Fl. & Fr.: April-July (Fruits up to December)

5. loc., Parry s.num. (sde C.E.C. Fischer, l.c.).

MELIACEAE

(K.P. Singh)

1a. Under shrubs or shrubs; flowers more than 2 cm long; petals connate for more than half way

1b. Trees, flowers less than 2 cm long; petals connate less than halfway or sometimes connate at base only:

2a. Ovules 1-2 in each cell, seeds lacking wings:

3a. Leaves usually serrate; fruits drupaceous

3b. Leaves usually entire or nearly so; fruits capsular or baccate:

4a. Leaves 3-5-foliolate; young parts densely lenticellate

4b. Leaves 5-many foliolate:

5a. Inflorescence a corymbose panicle; filaments free towards apex; capsules 2-valved, 1-seeded

5b. Inflorescence a large head; filaments sessile; capsules 2-valved, 2-seeded

6. Munronia

7. Melia

8. Walsure

9. Trichilia
5b. Inflorescence otherwise; filaments united throughout their length; capsules or berries more than 1 seeded:

6a. Stigma sessile or subsessile:

7a. Petals 3; fruit a capsule ... 2. Aphanamixis
7b. Petals 4-5; fruit a berry ... 1. Aglaia

6b. Stigma on an elongated style:

8a. Flowers bisexual, stout; anthers short; disc conspicuous, cupular, enclosing the ovary ... 4. Dysoxylum

8b. Flowers polygamous; anthers long, disc inconspicuous, not enclosing the ovary ... 3. Chisocheton

2b. Ovules many in each cell; seeds winged:

9a. Stamens free ... 8. Toona
9b. Stamens united into a tube ... 7. Swietenia

1. AGLAIA Lour.

1a. Fruit a berry ... 2. A. edulis
1b. Fruit a capsule:

2a. Leaves 2-6, alternate or subalternate ... 1. A. chittagonga
2b. Leaves 11-13, opposite or subopposite ... 3. A. spectabilis


Fig. 64.

Evergreen tree, 10-14 m tall with young parts silvery scaly (lepidote). Leaves 15-30 cm long; rachis lepidote. 2-6-foliolate; leaflets alternate, elliptic, oblong-elliptic to lanceolate, 7-4 x 2.5-4.5 cm, base ± oblique, narrowed, bluntly acuminate at apex, entire along margins, glabrous above, lepidote along the midrib and nerves beneath specially when young; lateral nerves 12-16 pairs; petiolules lepidote, 3-10 mm long. Male panicles
Fig. 64: Aglaia chittagonga Miq.
racemose, 10-15 cm long, lax, axillary. Female panicles shorter than males. Flowers whitish, 1-3 mm across; calyx cup-shaped, 3-lobed; petals 3-4, ca 3 mm long; ovary 2-3-locular. Capsules subglobose, 1.5-2 x 1.8 cm, indehiscent, 2-3-locular, usually 2-seeded.

Fl. & Fr.: August-March.

Common in tropical forests. 15 miles South-east of Lungleh, 900-1200 m, Gage 161 (CAL); Darzo-Leite, Dutta 34031; Aizawl protected forest, 3500 m, Deb 30555; Keifang, M. Sawmiliana 95581.


Large trees, up to 25 m tall with young parts covered with stellate hairs and scales. Leaves 20-35 cm long; leaflets opposite, elliptic lanceolate, oblanceolate or oblong-lanceolate, 9-13. 8-15 x 2.5-4. base acute to rounded, obtusely acuminate at apex, entire along margins, rusty tomentose when young, glabrescent at maturity, lateral nerves 12-16 paired; petiolules 5-10 mm long. Panicles 8-20 cm long, axillary, rusty tomentose. Flowers 1-2 mm across, yellow; calyx 5-lobed, minute, ovate, petals ovate-oblong, 1-2 mm long. Berries globose, 2-3 cm across, 1-3-seeded, yellowish, covered with lepidote scales, pulpy.

Fl. & Fr.: April-November.

Common in tropical evergreen forests, Lawngtalai to Saiha, Dutta 33782; Daulang forest, M. Sawmiliana 99295.

Fig. 65: Aglaia edulis (Roxb.) A. Gray
Evergreen trees, 20-25 m tall; young shoots and inflorescences covered with rusty brown fimbriated scales and stellate hairs. Leaves 35–45 cm long; leaflets 11-13, opposite, oblong, ovate-oblong, 8-18 x 3.5-7 cm, base narrowed or rounded, oblique, acuminate at apex, entire along margins, almost glabrescent except on nerves beneath; lateral nerves 12-16 paired; petiolules 3-10 mm long. Male panicles 40-50 cm long, many flowered; female panicles 17-15 cm long; male flowers smaller than females; flowers dull white; calyx obtusely 3-lobed with lepidoted-stellate margins; petals 3, ca 2 mm long, tomentose; staminal tube urceolate; ovary 3-4-locular; Capsules long, obovate or pyriform, 2.5-3.8 x 2-2.5 cm, tomentose, yellow when ripe, 3-valved, 2-3-seeded; seeds black with red aril.

Fl. & Fr.: June-March.

As per records of the Forest department, Government of Mizoram.

2. **APHANAMIXIS** Blume


Evergreen trees, 10-20 m tall. Leaves crowded at the ends of branchlets, 20-50 cm long, 9-19-foliolate; rachis 5-10 cm long; leaflets opposite, oblong-ovate, 7-20 x 4-8 cm, base oblique or caudate, acuminate at apex, entire along margins; petiolules 3-4 mm long; lateral nerves 12-15 paired. Male spikes paniculate, as long as leaves; female spikes shorter. Flowers dull-white, female ones larger than males; calyx 5-lobed with ciliolate margins; petals 3, hairy inside, ca 5 mm long. Capsules obovoid, 3-4 cm across, 3-valved, smooth, yellow when ripe, fleshy; seeds oblong; aril scarlet.

Fl. & Fr.: January-December.

Recorded on the basis of Jain & Bennet (*l.c.*).
3. CHISOCETHON Blume


Trees, 10-15 m tall; young parts tomentose. Leaves 0.3-1.1 m long; leaflets 7-24 (30), opposite or subopposite, oblanceolate, 8-28 x 4-9.5 cm, unequally acute at base, acuminate at apex, entire along margins, glabrescent above, thinly pubescent specially along the nerves beneath; lateral nerves 7-18 paired; petals 4-5 mm long. Panicles 30-80 cm long, axillary, pendulous; flowers 1-1.5 cm long, yellowish, tetramerous; buds club shaped; calyx cup shaped, ca 2 mm long; petals strap shaped, puberulous; ovary 4-locular. Capsules globose or subglobose 4-8 cm across, with pyriform base, smooth, orange-red; seeds black with a white or pale yellow aril.

**Fl. & Fr.:** June April.

Common on hill slopes in tropical forests. Between ridge camp and Lungsin, 600-900 m, Gage 203 (CAL); Near Fort Lungleh, Gage 271 (CAL); Lungleh hills, Prazer, s.num. (CAL); Sairang Deb 30630 (CAL); Sialsuk, Deb 30692.

4. **DYSOXYLUM** Blume

1a. Calyx almost entire, bow-shaped, coriaceous

1b. Calyx deeply 4-5 lobed, not coriaceous:

2a. Flowers in panicles; disc hairy at the mouth

2b. Flowers in racemes or spikes:

3a. Staminal tube glabrous:

4a. Leaves 20-30 cm long; leaflets opposite, 2 paired

4b. Leaves 7-13 cm long; leaflets opposite or subopposite

...1. **D. binectariferum**

...2. **D. gobarum**

...3. **D. rugulosum**

Evergreen trees, upto 15-30 m tall with young shoots and inflorescences minutely pubescent. Leaves 35-40 cm long; rachis 12-25 cm long; leaflets 6-8, alternate, obliquely ovate-oblong, 9-16 x 4.5-7 cm, base cuneate, abruptly acuminate at apex, entire or obscurely denticulate along margins; glabrous; lateral nerves 5-10 paired; petiolules 5-10 mm long. Panicles 20-30 cm long, axillary; flowers 3-7 mm long, pale white; calyx bowl-shaped, ca 3 mm long, thick, glabrous, almost entire or obscurely 5-lobed; petals 4, velvety outside; disc tubular, glabrous inside. Capsules globose with narrow base, 2.5-4.5 cm across, smooth, 4-locular, pale yellow, turning deep orange; seeds 4, oblong to ovoid, 1.5-2.5 x 1-1.5, shining, dark purple with large yellow hilum and white aril.

*Fr.*: January January.

**Changsil, Prazer, s.n.* (CAL). Between Lungleh and ridge camp, 900 m, *Gage* 198 (CAL).


Large trees, 15-25 m tall with young shoots slightly pubescent. Leaves 30-65 cm long; rachis terete; leaflets 7-13, opposite or alternate, obovate
or elliptic-oblong, ovate-oblong, 10-27 x 5-10 cm, base rounded or obliquely acute, bluntly acuminate at apex, coriaceous, glabrous, lateral nerves 10-16 paired; petiolules 10-15 mm long. Peduncles 30-45 cm long, axillary; flowers creamy white, 0.8-1.2 cm across, fragrant; calyx cup shaped, pubescent; petals 4, oblong, valvate; disc hairy at the mouth, encircling the hairy ovary. Capsules pyriform, 5-6 cm across, 3-4-locular; seeds 2-3, black with orange aril.

*Fl. & Fr.* December-August.

Common in evergreen forests. Near fort Lungleh, 900-1200 m, Gage 177 (CAL); Tepaimukh, U.N. Kanjilal 4776.


Trees, 12-20 m tall. Leaves 30-50 cm long, paripinnate; leaflets ca 3 paired, opposite, elliptic or elliptic-oblong, 15-23 x 4-9 cm, cuneate at base, broadly cuneate at apex, glabrous on both surfaces; lateral nerves 9-11 paired; petiolules 5-8 mm long. Racemes axillary; flowers solitary, 12-15 mm long; calyx 4-toothed, cup-shaped, puberulous-rugose; petals 4, oblong, puberulous; staminal tube shorter than petals, puberulous, anther 8. Disc tubular, puberulous. Capsules pyriform, 2.5-3.5 x 3-4 cm, top flattened, subglabrous; seeds 2 cm long, plano-convex.

North Vanlaiphai, Deb 31167 (CAL).


Small trees. Leaves 30-60 cm long; leaflets 4-10, alternate, oblong or ovate-oblong, 10-20 x 4-8 cm, base oblique, narrowly acuminate at apex, entire along margins, glabrous; lateral nerves 15-20 paired; petiolules 3-5 mm long. Racemes 5-22 cm long; axillary, spicate, flowers 4-6 mm long, greenish-white, fragrant; calyx deeply 4-lobed, cup-shaped, puberulous; petals 4, pubescent outside, ca 8 mm long; staminal tube and disc glabrous. Capsules pyriform, 3-4 cm long, slightly pubescent outside.
Fl. & Fr.: February-September.

Recorded on the basis of C.E.C. Fischer (I.c.)


Shrubs or small trees, up to 5 m tall. Leaves 30-40 cm long, pinnate; leaflets alternate, thin, elliptic-oblong, 12-20 x 5-8 cm, base broad, slightly unequal, acuminate at apex, glabrous on both surfaces, petiolules 2-5 mm long; lateral nerves 8-10 paired. Racemes 9-12 cm long, supra-axillary, puberulous; flowers 3 mm long, scattered, calyx 4-toothed, cup-shaped, puberulous; petals 4, longer than calyx, elliptic, base truncate, puberulous, staminal tube shorter than petals, sparsely puberulous, disc tubular, slightly longer than ovary, glabrous, fleshy; stigma subsessile with annular disc at its base. Capsules ovoid, 4-5.5 x 2.5-3 cm, rusty-puberulous, leathery.

Fl. & Fr.: December.

Theriet, Deb 31289 (CAL).


Small trees, 5 to 8 m tall. Leaves equally pinnate, 20-30 cm long; leaflets in 2 pairs, opposite, obtuse, upper pair much larger, 13-18 x 5-7 cm, thin, lower pair 9-11 x 4-4.5 cm, base narrow, abruptly acuminate at apex, rugulose when dry; petiololes 2 mm long. Lateral nerves 8-10 paired. Racemes 1-2 cm long, supra-axillary, 3 or 4-flowered, puberulous; flowers ca 5 mm long; calyx 4, flat, reticulate and glabrous inside; petals 4, elliptical, puberulous outside, glabrous inside; staminal tube shorter than petals, cylindric, pubescent outside; disc shortly cylindric, 8-9-toothed, slightly exceeding the ovary, fleshy, glabrous. Capsules pyriform, ca 3 x 2 cm, apiculate, puberulous.

Tawipui-Thingphal, Dutta 33700.
5. MELIA L.

1a. Flowers lilac; staminal tube glabrous, suddenly expanded at mouth; drupes less than 2 cm long

1b. Flowers white; staminal tube ± hairy and suddenly not expanded at mouth; drupes more than 2 cm long


   Medium sized deciduous trees, 12-16 m tall. Leaves 30-90 cm long, bi- or rarely tri-pinnate; pinnae 5-9, opposite; leaflets 3-7 on each pinna with terminal leaflet largest, ovate-lanceolate, lanceolate or elliptic lanceolate; 7.5-5 x 1.2 cm, base obliquely cuneate, acuminate at apex, toothed or lobed along margins, stellate tomentose when young; petiolules up to 5 mm long. Panicles axillary; peduncles 7-10 cm long; flowers pale lilac, 1-1.5 cm across, puberulous; calyx 5, minutely stellate-tomentose; petals 5, 4-7 mm long, linear-oblong, pubescent outside; staminal tube purple, glabrous. Drupes elliptic or oblanceolate, 1-1.8 cm long, yellow when ripe, 1-seeded, fleshy.

   FI. & FR.: May-December.


   Large deciduous trees, up to 25 m tall with large oval crown. Leaves bipinnate, 25-60 cm long; pinnae 3-8 pairs; leaflets 3-13, ovate-lanceolate to ovate-rotund, 2.5-6 x 1.5-2.5 cm, base oblique, acuminate at apex, serrate to entire along margins, glabrescent with age; lateral nerves 6-10 pairs; petiolules up to 4 mm long. Panicles 12-16 cm long, many flowered; flowers 6-8 mm across, white; calyx 3-partite, tomentose; petals linear-
spathulate with white dots, ca 5 mm long. Drupes smooth, globose to
oblong, 2.5-4 x 1.5-2.5 cm, pulpy, 1-6-seeded.

Fl.: March-April, Fr.: ripens December to February.

Tuivawal, M. Swamliana 95596.

Fruits are eaten by barking deer.

6. MUNRONIA Wight

waltichii Wight, Illus. Indian Bot. 1: t. 54. 147. 1840; Hiern in Hook. f.,
Fl. Brit. India 1: 543. 1875; Kanjilal et al., Fl. Assam 1: 235. 1936; C.E.C.

Undershubs. 0.25-1 m high. Leaves alternate, 15-30 cm long, crowded
at ends of shoots; petioles 5-10 cm long; leaflets opposite, 5-9, ovate-oblong
or lanceolate, 3-10 x 1.5-3 cm, base obliquely acute or rounded, bluntly
acuminate at apex, entire or undulate along margins, pubescent on nerves
beneath; lateral nerves 5-6 paired; petiolules of lateral leaflets short,
terminal leaflet up to 1.5 cm long. Peduncles 10-15 mm long; flowers
axillary towards end of shoots, 2-4 cm long, white or pink; calyx 5-partite,
ovate, 5-6 mm long, foliaceous, pubescent out side; petals 5, narrow,
spathulate, 1.5-3 cm long, clawed; disc tubular; ovary 5-locular. Capsules
globose, 1-1.5 cm across, 5-valved, hairy, red; valves 1 or 2-seeded; seeds
black, shining, plano-convex.

Fl. & Fr.: September-March.

In shady forests. Tuivulnukh, 600 m, Parry 210. (fide C.E.C. Fischer,
l.c.); s.loc. Wenger 342 (fide C.E.C. Fischer, l.c.); Saiithah, D.K. Singh
92925.

7. SWIETENIA Jacq.

Swietenia macrophylla King in Hooker's. Icones Pl. 16. t. 1550. 1836;
Tecoma, glabrous. Leaves 30-45 cm long, spirally arranged, pinnately compound, leaflets opposite, or subopposite, 5-6 pairs, 4-15 x 2-6 cm, obliquely lanceolate, base unequally rounded, acuminate at apex, entire along margins, glabrous; petiolules up to 7 mm long. Panicles 8-21 cm long, axillary, flowers 4-8 mm across, greenish, fragrant, pentamericous, calyx cupuliform, imbricate; petals 4-5 mm long, obovate-oblong; staminal tubes urceolate. Capsules 15-17 x 6-9 cm, inverted club-like, reddish-brownish, minutely tuberculate, 5-celled; valves woody, thick; seeds many per cell, winged, 7-9 cm long along with wings, brownish.

Fl. & Fr.: April onwards.

Cultivated. Recorded on the basis of C.E.C. Fischer (l.c.).

**8. TOONA** (Endl.) M. Roemer


Large trees, up to 27 m tall, all parts glabrous. Leaves 45-70 cm long, usually pinnate; leaflets 8-20, opposite or nearly so, obliquely ovate-lanceolate, oblong-lanceolate, 10-20 x 4-7 cm, base cuneate, acuminate at apex, waved to entire along margins, glabrous; lateral nerves 10-15 pairs; petiolules 8-15 mm long. Panicles 10-40 cm long; flowers 6-8 mm across, greenish or creamish-yellow, unisexual, slightly fragrant; sepals free; lobes ovate; petals 5, oblong, 4-5 mm long, with ciliate margins; filaments pilose or hairy, disc orange-red; ovary 5-locular; stigma hispide. Capsules oblong-ellipsoid, ca 2.2 x 0.8-1.2 cm, dark brown, 5-valved; seeds brown, very light, winged at both ends, ca 1.5 cm long.


Leaflets 7-13 x 3-4.5 cm; capsules ca 2 x 0.9 cm.
Fig. 66: Toona ciliata M. Roemer
Fl. & Fr.: March-July.

Near Vanopa Hall, Aizawl, J.M. Kama 00319 (Mizoram forest herb).


Leaflets more than 18 x 7 cm; capsules larger, 2.5 x 1.2 cm.

Fl. & Fr.: October-January.

Recorded on the basis of C.F.C. Fischer (t.c.)

9. TRICHLILA P. Browne


Small trees or shrubs, up to 5 m tall, glabrous at maturity. Leaves alternate, crowded at ends of branchlets, 20-50 cm long with angular rachis; leaflets 5-7(11), ovate-oblong, ovate-lanceolate, 9.5-15 x 3.5-7 cm, base rounded or obliquely subacute, acuminate at apex, entire along margins; lateral nerves 10-13 paired; petiolules 15-18 mm long, articulate at apex. Cymes corymbosely paniculate; flowers white or cream coloured. 4-6 mm across; calyx 5-lobed, hairy outside, ovate, petals 5, puberulous outside, ciliolate; staminal tube with yellow lobes. Capsules oblong to subglobose, 3-12 mm across, red, 1-celled, 2-valved; seed 1, ovoid with thin white aril, brown when dry.

Fl. & Fr.: March-December.

Thingtal-Lungleh, Dutta 33720.
10. **Walsura** Roxb.


Trees, 20-25 m tall with young shoots pubescent. Leaves 15-25 cm long, petiolules 4-6 cm long; leaflets 3-5, elliptic to oblong-lanceolate, 4-10 x 2-7 cm, base acute to cuneate, bluntly acuminate at apex, entire along margins, glabrous, shining above, pale beneath; lateral nerves 5-7 paired; petiolules 5-15 mm long. Panicles 10-18 cm long, terminal; flowers 4-5 mm across, white or yellowish; calyx 5-toothed, pubescent; petals 5, ovate, 3 mm long, pubescent outside; stamens 10; filaments free, subulate. Berries subglobose, up to 2 cm across, 1-2-seeded, indehiscent.  

*Fl. & Fr.*: December-August.

In evergreen forests. Langleh, *Dutta* 33416.

**CULTIVATED TAXA**


**OLACACEAE**

(K.P. Singh)

1a. Climbing shrubs; leaves palmately veined at base; bracts free, caducous or absent

1b. Trees; leaves pinnately veined at base; bracts connate, forming persistent epicalyx

1. *Erythrophloium*

2. *Schoepfia*
Fig. 67: *Walsera robusta* Roxb.
1. *ERYTHROPALUM* Blume


Rambling climbers with axillary tendrils. Leaves distichous, alternate, ovate-oblong to lanceolate, 7-15 x 3.5-6.5 cm, base rounded or narrowly petate, acuminate at apex, entire along margins, membranous, glabrous, shining, palmately 3-nerved; petioles 2-5 cm long. Cymes axillary, paniculate, peduncles 4-10 cm long; flowers white or yellow, 2-3 mm long. Drupes ellipsoid, 15-23 x ca 10 mm, 5-valved, orange-yellow, surface rough; ends obtuse, seed single, purplish grey, naked.

*Fl. & Fr.*: August-March.


2. *SCHOEPFIA* Schreb.


Evergreen trees, 5-15 m tall with angular branchlets. Leaves elliptic-lanceolate, 3-8 x 1-3 cm, base cuneate, acute to acuminate at apex, entire along margins; glabrous on both surfaces; lateral nerves 5-7 pairs; petioles 4-8 mm long. Racemes 2-3 cm long, axillary; flowers 8-12 mm long, yellowish-white, fragrant; calyx entire; petals 5, 6-7 mm, long, combined up to three fourth of their length and forming a campanulate corolla, valvate. Drupes ellipsoid, 10-15 mm long, white, nearly covered accrescent calyx, 1-seeded, succulent when ripe, surface straited.

*Fl. & Fr.*: August-January.

A second storey tree in evergreen forests. Hmaungang, 1500 m, Parry 205 (fide C.E.C. Fischer, l.c.); 247 (CAL); s.loc., Dutta 33566, Champhai, 1600 m, K.P. Singh 94507.
ICACINACEAE

(K.P. Singh)

1a. Leaves stellately hairy underneath at least in young stage; calyx deeply divided, imbricate

1b. Leaves glabrous underneath; calyx cupular with short, often obscure teeth, not imbricate:

2a. Flowers bisexual; petals free; drupes with a fleshy puffy appendage

2b. Flowers polygamous-dioecious; petals connate; drupes without a fleshy appendage

1. APODYTES E. Meyer ex Arn.


Tall trees with straight boles, 20-30 m; young shoots pubescent. Leaves alternate, elliptic to ovate-lanceolate, 7-14 x 3.5-5 cm, base obtuse or subequally acute, acute or shortly acuminate at apex, revolute along margins, glabrous or glabrescent, turning black on drying; lateral nerves 4-7 pairs; petioles 1.5-2.8 cm long. Panicles 6-11 cm long, terminal, corymbose; flowers white, bisexual, 6-7 mm across, sweet scented; calyx minute, salver shaped; petals oblong; styles persistent, pushed downwards as the fruit develops. Drupes obliquely obovoid, ca 8 x 5 mm, compressed, longitudinally striated, hisprous, furnished with a fleshy puffy appendage covering the whole flat inner face that turns reddish-brown in ripe fruits, 1-seeded; seeds obovate.

Fl. & Fr.: May-December.

Scarce in the area. It is a rare plant. Denglang forest. K.P. Singh 94115; Forest training school, Bethlehem, M. Sawmiiana 99292.
2. **GOMPHANDRA** Wallich ex Lindley


Large shrubs or small trees. Leaves alternate, bifarious, oblong or lanceolate, 8-12.5 x 2.5-3.5 cm, base rounded or acute, acuminate at apex, entire along margins, membranous to chartaceous, glabrous on both surfaces, paler beneath; petioles 4-5 mm long. **Paniculate cymes axillary, 6-12 mm long, puberulous, few-flowered; flowers creamy-white, unisexual or polygamous; calyx minute, cup-shaped; petals ovate; filaments thick, pilose with glandular hairs at apex. Drupes oblong-ellipsoid, 1.2 x 0.5-0.8 cm, broadly attenuate at base, not swollen; seeds straited outside, large.**

*fl. & fr.*: May-December.

Scarce on the hilly slopes. Lunglei forest, *Prazer* 1890, *s.n.* (CAL); Tilthang, *K.P. Singh* 96627.

3. **PLATEA** Blume


Trees, 20-30 m tall; shoots rusty-villous. Leaves ovate-elliptic or elliptic-oblong, 8-18 x 3-8 cm, base rhomboid or broadly cuneate, acuminate at apex, entire along margins, mature leaves glabrous above, young leaves ferrugineus stellate hairy and woolly; lateral nerves 7-12 paired, prominent beneath; petioles 2-4 cm long. Male flowers in panicles pseudo-spikes up to 6 cm long, axillary; calyx deeply divided; lobes ovate, minutely villous; petals connate at base. Females flowers in few flowered cymes; corolla and staminodes none; ovary woolly or glabrous. Drupes oblong, 1.5-4.5 x 0.8-2 cm, with broad obtuse apex; yellow-orange to red.
Fl. & Fr.: February-September.

Hnuifang, 1250 m, *Deka s. num*.

**OPILIACEAE**

(K.P. Singh)

**LEPIONURUS** Blume


Large shrubs or small trees, 0.5-3 m tall, with switchy branches, glabrous. Leaves alternate, oblong-lanceolate to elliptic or obovate, 6-10 x 3-6.5 cm, base acute, acuminate at apex, entire, membranous, glabrous, pustulate; lateral nerves 6-9 paired; petioles 2-4 mm long. Racemes axillary, 1-7 in each axil, 3-6 cm long, erect or drooping; flowers 1-2 mm long, greenish to pale yellow, faintly scented, bisexual; perianth 4-lobed, 3-4 mm in diam., urceolate; disc fleshy. Drupes ellipsoid, up to 1.5 cm long, orange; 1-seeded, glabrous.

*Fl.* & *Fr.*: March-January.

Darlawn, 1100 m, *M. Sawmlicana s. num*.

**CARDIOPTERIDACEAE**

(K.P. Singh)

**CARDIOPTERIS** Wallich *ex* Royle


Climbing herbs with milky juice; stems terete, striate. Leaves alternate, polymorphous, broadly ovate in outline, 3-5-lobed, 8-13 x 9-13 cm, base cordate, palmately 7-9-nerved; lobes acute or acuminate at apex, glabrous-herbaceous, widely divergent, membranous; pediole 4-8 cm long. Flowers 3-4 mm across, in axillary racemes or panicked cymes, white; peduncles dichotomous 7-12 cm long; calyx persistent, puberulous; corolla caduceous. Fruits obovate-orbicular or obcordate, 18-25 x 12-20 mm, compressed, broadly winged, tipped with linear, 1-1.5 cm long style, apically notched, 1-celled; seeds 1, linear, furrowed.

*Fl & Fr.* July-January.

Common on hill slopes in open places and in dry bamboo jungles. North Vanlaiphai, 1500 m, *Purry 367* (fide C.E.C. Fischer, l.c.); Theriat, *Deb 31312; Tu*, on way to Mamit, *D.K. Singh 99200*.

**AQUIFOLIACEAE**

(K.P. Singh)


Evergreen shrubs or small trees, up to 8 m tall; young shoots and inflorescence pubescent. Leaves ovate, elliptic or oblong 4-12 x 1.5-4.5 cm, acute at base, bluntly short acuminate above, entire to undulate along margins, thinly coriaceous, glabrous above, pale beneath; lateral nerves 8-10 paired; pediole 1-1.5 cm long, pubescent. Inflorescence umbels or panicles, flowers 4-5-merous, scented. Male inflorescence 1-30-flowered, up to 2 cm long; calyx lobes 4-5, patelliform, pubescent, obtuse, ciliate.
Fig. 68: Cardiopteris quinqueloba (Hassk.) Hassk.
petals broadly obovate or oblong, ca 2.5 mm long, connate below. Female inflorescence 4-15-flowered; ovary ovoid with capitate stigma. Drupes globose; ca 3 mm across; pyrenes 4-6, ca 2 mm long, 3-striate.

Fl. & Fr.: February-April.

Kharuwhtian F.R.H., K.P. Singh 97125.


Trees, up to 18 m tall, young shoots glabrous. Leaves ovate or elliptic-oblong, 10.5-14 x 5-6 cm, rounded or obtuse at base, acute-acuminate at apex, entire, undulate at margins, membranous; lateral nerves 9-12 paired; petals up to 2 mm long. Inflorescence subumbelliform; flowers 4-5 merous. Male inflorescence 6-16-flowered; calyx lobes 4-5-petalliform, semi-orbicular, pubescent and ciliate out side; petals oblong, ca 2 x 1.5 mm, connate at base. Drupes globose ca 6 mm across; pyrenes 6-10, trigonous-laterally compressed, ca 4 x 2.5 mm, 3-striate.

Fl. & Fr.: April-September.


**CELASTRACEAE**

(K.P. Singh)

1a. Leaves alternate:

2a. Scandent shrubs; inflorescence paniculate or racemose, usually at branch tips; ovary free from disc; seeds completely enclosed by aril...

... 1. Celastrus

2b. Small trees or erect shrubs; inflorescence axillary cymes, dichotomously branched; ovary partly immersed in the disc; seeds partially enclosed (basal half) by aril...

... 3. Maytenus

1b. Leaves opposite:
3a. Flowers pedunclated; petals free, spreading; disc conspicuous; capsules more than 3-seeded; seeds arillate ... 2. *Haemotome*

3b. Flowers in sessile clusters; petals erect, slightly connate at base; disc absent; capsules 1-seeded; seeds arillate ... 4. *Microtropis*

1. **Celastrus L.**

1a. Flowers in terminal panicles; styles simple ... 7. *C. paniculatus*

1b. Flowers in terminal and axillary racemose cymes; styles 3-lobed at apex

2a. Young shoots lenticellate, terete ... 3. *C. stylatus*

2b. Young shoots not lenticellate, quadrangular ... 1. *C. hindsii*


Glabrous woody climbers without lenticellate, quadrangular branchlets. Leaves elliptic or elliptic-oblong, 6-13 x 2.5-7 cm, base acute or rounded, bluntly or shortly acuminate at apex, serrate along margins, coriaceous, glabrous, pinkish beneath; lateral nerves 5-7 paired, much arched; petioles 5-8 mm long. Peduncled cymes ca 14 cm long, terminal and axillary; flowers ca 4 mm across, whitish. **Male flowers**: sepals obtuse, ciliate, up to 2 mm long; petals oblong-obovate, 2-5 mm long; stamens arising from the margin of disc. **Female flowers**: ovary subglobose, 3-locular; stigma 3-lobed; disc cup shaped. Capsules obovoid, 1-celled, 3-valved, 10-15 mm long, 1 or rarely 2-seeded; seeds elliptical, 5-6 mm long, brown, transversely wrinkled.

**Fl. & Fr.**: March-October.

Valley near Fort Lunglei, 900-1200 m, Gage 16, 40, 147 (CAL).

Large, deciduous, woody climbers with lenticellate branchlets. Leaves variable in size, broadly oval and ovate to obovate or oblong obovate, 6-17 x 4.5-8.5 cm, base rounded or acute, bluish or shortly acuminate at apex, crenate-serrulate along margins, glabrous, pubescent beneath, ± coriaceous; lateral nerves 4-8 paired; petioles 6-10 mm long. Panicles up to 15 cm long, terminal, drooping, pubescent; flowers 3-4 mm across, pale greenish. Male flowers: sepals 5-lobed, ca 2 mm long; petals obovate, 2-3 mm long; stamens ca 2 mm long. Female flowers: sepals and petals as in male flowers; stamens sterile; ovary globose with 3-lobed stigma. Capsules globose, 6-10 mm across, obscurely trigonous, usually 3-celled, orange-yellow when ripe; seed 1-2 in each cell, oval; seeds ellipsoid, 3-5 mm long, arillate.

Fl. & Fr.: April-December.

Puilo basti Road, K.P. Singh 94492.


Subscandent shrubs with lenticellate branchlets. Leaves elliptic, oblong-elliptic to lanceolate or obovate, 7-11 x 5-7 cm, base obtuse or acute, acute to obtusely acute at apex, cuspitate-serrate along margins, glabrous, coriaceous; lateral nerves 5-8 paired; petioles 1.2-5 cm long. Cymes racemose, axillary, up to 2 cm long; peduncles 5-10 mm long; flowers 4-5 mm across, greenish-white. Male flowers: sepals 5-lobed, ca 2 mm long; petals obovate, 2-3 mm long, papilllose; disc cupular; stamens papilllose, arising between the disc lobes. Female flowers: ovary subglobose; stigma 3-lobed. Capsules globose, 7-10 x 5-10 mm, yellow when ripe; 3-6-seeded, seeds enclosed in a red aril, plano-convex, ca 4-5 mm long, dark brown.

Fl. & Fr.: March-October.

In moist dense forests. Sabual, ca 1000 m, D.K. Singh 99038.
2. **EUONYMUS** Tour. ex L.

1a. Flowers pentamerous:

2a. Leaves serrate upward only; flowers white ...
   3. *E. globifer*  
2b. Leaves entire throughout; flowers blood-red ...
   1. *E. attenuatus*

1b. Flowers tetramerous:

3a. Climbing shrubs with terete branches; flowers greenish-white ...
   4. *E. theifolius*  
3b. Erect shrubs with glandular branches; flowers greenish-yellow ...
   2. *E. frigidus*


Shrubs or small trees, 3-5 m tall. Leaves oblong-lanceolate, elliptic, 5-12 x 2-4 cm, base cuneate, bluntly acuminate at apex, entire along margins, glabrous, coriaceous; lateral nerves 6-8 paired; petioles 0.8-1.5 cm long. Cymes axillary or supra axillary, dichotomously branched; peduncles 2-5 cm long; flowers 5-8 mm across, red, pentamerous; calyx lobes unequal, ovate; petals obovate-orbicular. Capsules 5- or 4-lobed, obovoid, 8-12 mm across, glabrous. 1-seed in each cell; seeds black with yellow aril.

*Fl.* & *Fr.*: April-November.

**Dutta** 33665; South Vanlaiphei, **Dutta** 34019.


Shrubs, 1-2 m tall with 4-angled branchlets. Leaves oblong-lanceolate or lanceolate, 5-13 x 1.5-3 cm, base tapering, caudate acuminate at apex, sharply serrate along margins, glabrous, coriaceous; lateral nerves 8-12 paired; petioles 6-10 mm long. Cymes axillary or extra axillary, few flowered, dichotomously branched; peduncles 3-5 cm long; flowers 2-3
mm across, tetramerous, greenish-yellow; calyx lobes suborbicular; petals orbicular, entire. Capsules leathery, 4-winged or lobed at base, ovate-rounded; wings narrow, triangular.

Fl. & Fr.: May-November.

S.loc. 1050 m, Wenger 219 (fide C.E.C. Fischer, l.c.).


Evergreen trees, 10-13 m tall with terete branchlets. Leaves obovate-oblong to oblong, 7-10.5 x 3.5-3.8 cm, base cuneate, bluntly acuminate at apex, obtusely slightly serrate upwards, glabrous; lateral nerves 5-7 paired; petioles 5-15 mm long. Cymes axillary, dichotomously branched; peduncles 2-4 cm long; flowers 4-7 mm across, pentamerous, white; petals broadly oblong. Capsules obovate, 10-12 mm long, 5 or 4-lobed, smooth, convex at apex, narrowed towards base; seeds black, 1 in each locule.

Fl. & Fr.: March-September.

S.loc. 1050 m, Wenger 218 (fide C.E.C. Fischer, l.c.); s.loc., Parry 21 (CAL).


Subscandent shrubs, 2-3 m high with terete branches. Leaves variable, elliptic-lanceolate or oblong-lanceolate, 5-11 x 1-5 cm, base cuneate or acute, acuminate at apex, recurved or distantly serrate along margins, glabrous; lateral nerves 7 10 paired; petioles 4-10 mm long. Cymes axillary or supra axillary, dichotomously branched; peduncles up to 15 mm long; flowers 4-8 mm across, white or greenish-white, tetramerous; calyx lobes rounded; petals orbicular, entire. Capsules subglobose, red, 5 or 4-lobed, 7-12 mm across; seeds 2 in each cell, 6-7 mm long, black, plano-convex with yellowish-orange aril.
Fl. & Fr.: April-June.

Phongphui, 2100 m, Parry 566 (sides C.E.C. Fischer, l.c.).

3. *Maytenus* Molina

1a. Flowers in cymes only

1b. Flowers in cymes or in fascicles


Shrubby trees, up to 10 m tall; branchlets angular, thorny. Leaves lanceolate, elliptic-lanceolate or oblanceolate, 5.5-15 x 2.5-6 cm, base cuneate, acuminate at apex, serrate along margins, glabrous; lateral nerves 7-9 paired; petioles 5-7 mm long, channelled. Cymes 5-8 cm long, axillary, dichotomously branched; flowers 4-5 mm across, reddish-brown; sepals 5, ca 1 mm long, ovate; petals 5, 2-3 mm long. Capsules obovate or subglobose, 7-8 mm across, compressed, 2-celled; seeds ca 2 mm across, ellipsoid, black.

Fl. & Fr.: March-October.

Lungleh, 900 m, Gage 10 (CAL); N. Lushai hills, Kulikawn, Godfrey 437 (CAL); Kawnpui, K.P. Singh 96985.


Trees with armed branches. Leaves lanceolate to oblong-lanceolate, 7-12 x 5 cm, base tapering, acuminate at apex, serrate along margins, subcoriaceous, glabrous; lateral nerves 7-10 paired. Flowers in axillary cymes or fascicles, sepals and petals 4-5-lobed. Capsules broadly ovate, 2-valved, 2 (1)-loculed, smooth; seeds 2.
Fl. & Fr.: April-October.

Lushai hills, Parry s.n. (CAL).

4. MICROTROPIS Wallich ex Meissner


Evergreen shrubs or small trees, 3-8 m tall, all parts glabrous. Leaves elliptic to lanceolate, 5.5-12 x 2.4 cm, base attenuate, acuminate at apex, entire along margins; lateral nerves 5-7 paired; petioles up to 10 mm long. Cymes 10-15 mm long, axillary or supra-axillary, corymbose or umbellate; flowers 3-5 mm across, greenish-white or purplish-green; calyx lobes broadly orbicular, petals elliptic, c. 2 mm long. Capsules ellipsoid-oblong, 12-15 x 8-12 mm, smooth, 2-valved, 1-celled; seeds stipitate, ellipsoid, 10-12 x 7-8 mm, scarlet red.

Fl. & Fr.: July-June.

Tuipang, 1200 m, Parry, 471 (fide C.E.C. Fischer, l.c.); s.l.n., Parry s.n. (CAL); 5th mile, S.E. from Lungleh, 900-1200 m, Cage 159 (CAL); Theriat, Deb 3131; Tamadil, M. Sawmlana 95560.

HIPPOCRATEACEAE

(K.P. Singh)

1a. Inflorescence of sessile fascicles; petals clawed; fruits follicular, dehiscence, seeds winged

1. Loeseneriella

1b. Inflorescence a pedunculate compound cyme, petals not clawed; fruits a berry; seeds wingless

2. Salarzia

1. LOESENERIELLA A.C. Smith


Large woody climbing shrubs, reaching up to the top of trees; branchlets terete, quadrangular. Leaves elliptic-ovate, 8-13 x 3-5 cm, base rounded or obtuse, shortly acuminate at apex, subentire to entire along margins, subcoriaceous, glabrous on both sides; lateral nerves 6-8 pairs; petioles 5-8 mm long. Cymes terminal as well as axillary, 5-12 cm long, dichotomously branched; flowers pale-yellow or white, 2-6 mm long; calyx 5-lobed ovate with thin reddish margins; petals 5, 4-5 mm long, glabrous, or pilose on the upper half, glabrous within; disc cup-shaped; stamens 3. Ripe carpels (Samara) ovate or oblong-ovate, 5-8 x 2-3 cm, base acute, flat, woody, reddish in side, 3-6-seeded; seeds 1.5-1.3 x 0.6-0.8 cm, winged, brown, compressed; wings 3-5 x 1.5-2 cm, membranous, thin, shining brown.

Fl. & Fr.: September-February.

Teirei, D.K. Singh 99110.

2. SALACIA L.

1a. Cymes peduncled and dichotomously branched  ... 1. S. floribunda

1b. Cymes sessile; pedicels axillary, arising directly from tubercle or wart:

2a. Flowers pedicillate, 3-6  ... 3. S. salacioides

2b. Flowers nearly sessile, 1-3  ... 2. S. khasiana


Scandent shrubs. Leaves elliptic-lanceolate to oblong, 9-14 x 3-6 cm, base acute to subobtuse, bluntly acuminate at apex, serrate along margins, coriaceous, glabrous; lateral nerves 9-12 pairs; petioles up to 1 cm long. Cymes axillary, paniculate with 10-15 mm long peduncles; flowers 3-4 mm
across, pale yellowish-greenish; calyx 5-lobed, small; petals broadly orbicular, imbricate; stamens inserted in the disc near ovary. Drupes globose to ellipsoid, 3-3.5 x 2-3 cm, red; 1-4-seeded, embedded in mucilaginous pulp.

*Fl. & Fr.*: October-May.

Khaitum, *Deb 31 209*.


Woody climbing shrubs. Leaves elliptic, oblong-lanceolate, 6-12 x 2.5-4 cm, base subacute, acuminate at apex, entire to recurved along margins, glabrous, coriaceous; lateral nerves 5-8 pairs; petioles 5-8 mm long. Flowers usually solitary in 3, arising from a tuberel in axil of leaves, sessile to subsessile, greenish; sepals 5, orbicular; petals 5, ca 1 mm long. Drupes (berry) oblong-ellipsoid or globose, 12-35 x 8-13 mm, 4-seeded.

*Fl. & Fr.*: April-October.

Valley near fort Langleh, 900-100 m, *Gage 17*, 154 (CAL).


Lofty woody climbers, all parts glabrous. Leaves elliptic-oblong or oblong-lanceolate, 9-15 x 4-6 cm, base acute or subacute, caudate-acuminate at apex, entire or nearly so along margins, glabrous, coriaceous; lateral nerves 5-8 pairs; petioles 6-10 mm long. Fascicles axillary, 3-6-flowered, arising from a bracteate globose stamine; flowers ca 7 mm across, yellow-green or greenish-orange; sepals orbicular, ciliolate; petals rotundate, ca 1 mm long, sessile. Drupes globose, 3-5 cm across, pinkish-red, 2-3-celled with a solitary large seed in each cell; pulp edible.

*Fl. & Fr.*: March-October.
Common in evergreen tropical forests. Theiriat. Deb 31329.

**RHAMNACEAE**

(K.P. Singh)

1a. Leaves palmately 3-veined at base:

2a. Branches with stipular spines; fruit with 1 pyrene .... 5. Ziziphus

2b. Branches without stipular spines; fruit with 3 pyrene .... 2. Hovenia

1b. Leaves pinnately veined:

3a. Trees or erect shrubs; fruits not winged .... 3. Rhhamnus

3b. Climbers; fruits winged or compressed like wing at the apex:

4a. Branchlets with tendrils; disc with linear processes; ovary inferior, fruits indehiscent, 3-winged .... 1. Gouania

4b. Branchlets without tendrils; disc without processes; ovary superior or half inferior; fruits dehiscent, compressed like a wing above the seed .... 4. Smillthea

1. **GOUANIA** Jacq.

1a. Leaves usually entire along margins; flowers sessile, densely pubescent .... 2. *G. microcarpa*

1b. Leaves serrate along margins; flowers shortly pedicellate, glabrous .... 1. *G. leptostachya*


Unarmed, scandent shrubs with crenate, axillary or supra axillary tendrils; branches glabrous. Leaves alternate, ovate to oblong-ovate, 5-13 x 3-6 cm, base rounded to subcordate or cordate, acuminate at apex, crenate or serrate along the margins, glabrous, sparingly sprinkled with short appressed hairs along the nerves beneath; lateral nerves 5-6 pairs;
petioles 1.5-3 cm long. Racemes 10-30 cm long, axillary and terminal, simple or branched, slightly puberulous; flowers 3-4 mm across, greenish-white; calyx lobes glabrous; petals 1-2 mm long, hooded, inserted below the margins of the disc; disc 5-angled; ovary immersed in the disc; style 3-cleft up to middle. Capsules 7-10 mm across, coriaceous with 3 rounded short wings, 3-celled, glabrous, splitting into 3, 1-seeded indehiscent cocci; seeds ± compressed, shining, ca 5 mm long.

*Fl. & Fr.*: July-December.

Common around village forests and along the streams. Vanjoh-Kapleya, Leslie 289 (CAL); Mamit, Deb 3456; Aizawl, Deb 30826; Thahung, K.P. Singh 94255; Near Htupui, K.P. Singh 94331; North Vanlaiphei, D.K. Singh 93058.


Climbing, tendriliferous shrubs; tendrils axillary or supra-axillary. Leaves elliptic-ovate, 5-8 x 2-3.5 cm, base rounded to subcordate, acute at apex, entire or slightly serrate at margins, glabrous; lateral nerves 4-6 pairs; petioles ferruginous, 5-10 mm long. Racemes pubescent, axillary; flowers greenish-white, 4-5 mm across, sessile; calyx densely tomentose outside, ca 2 mm long; petals obovate-oblong, cucullate, 1-1.5 mm long; disc 5-lobed, glabrous, saucer-shaped. Capsules ca 5 x 8 mm, shortly 3-winged, glabrous, 3-angled, tipped by persistent style; seeds ca 5 x 4 mm.

*Fl. & Fr.*: June-May.

Scarce along the margins of evergreen forests. Taitaw, 700 m, Dutta 33211.

*Uses*: Fruits are edible.

2. *HOVENIA* Thunb.


Medium, deciduous, unarmed trees, up to 30 m high; young shoots tormentose. Leaves simple, alternate, elliptic to suborbicular-ovate, 7-13 x 5-7.5 cm, rounded or acute at base, long acuminate at apex, serrate along margins, glabrescent on both surfaces, hairy beneath on veins, 3-nerved from base; petioles 2-2.5 cm long; stipules lanceolate, ca 3 mm long. Cymes axillary and terminal, dichotomously branched, 3-5 cm long; flowers bisexual, white to yellowish, ca 6 mm across; calyx 5-fid, white, tube funnell-shaped; petals 5, clawed; disc lining the calyx tube. Drupes spherical, 3-celled, 7-8 mm across, nearly dry; seeds 3, orbicular, 3-4 mm across, lilac.

Fl. & Fr.: April-October.

Scarce, in primary forests. Mulapheng, ca 1300 m, M. Sawmliana 104729.

3. RHAMNUS L.


Bushy shrubs with straggling, slender branches. Leaves oblong, elliptic or ovate, 3-12 x 2-5.5 cm, base ± rounded, abruptly acuminate at apex, serrulate along margins, glabrous; lateral nerves 5-7 pairs; petioles 8-15 mm long. Fascicles of flowers in simple or paniced pubescent racemes; pedicles 2.5 cm long, bracts leaf like; flowers 5-merous, ca 4 mm across, white; calyx persistent, accrescent; petals oblong. Drupes baccate, obovoid, 5-7 mm across, dark-red, turning black when fully ripe, seated on the reflexed calyx; 2-4-seeded; seeds obovoid, 2-3 mm long, blackish.

Fl. & Fr.: June-February.

Scarce, in humid forests as well as in open places along the road side. Alcawl protected forests, Deb 30532 (CAL), Champhai, K.P. Singh 94529, North Vanlaiphai, D K Singh; Rulchawm, M. Sawmliana 99749
Fig. 69: Hovenia dulcis Thunb.
4. SMYTHEA Seem ex A. Gray


Large, woody climbers with cirrhiform rusty tomentose branchlets. Leaves lanceolate, oblong-lanceolate, ovate-lanceolate, 6-12 x 2-4 cm, those on flowering branches smaller in size, base unsymmetrical, rounded on inner half, subacute on the outer, acuminate at apex, serrate along margins, glabrous with age; lateral nerves 6-7 pairs; petioles 3-4 mm long. Inflorescence 10-15-flowered fascicles, axillary; calyx 5-lobed, tube persistent; petals truncate. Capsules samaroid, obovate or elliptic-oblong, 5-6 x 1-1.5 cm, 1-seeded, adnate at base to calyx tube, compressed above, wing glabrous mucronate at tips, base narrowed, grey-brown, pubescent, strongly ribbed with parallel nerves, dehiscing along the middle into 2 valves; 1-seeded; seeds black.

Fl. & Fr.: February–December.

Theiriata, Deb 31281 (CAL).

5. ZIZIPHUS Thunb ex Miller

1a. Leaves ± glabrous beneath except on nerves; flowers in pedunculate cyemes

   1. Z. incurva

1b. Leaves tomentose beneath;

   flowers fascicled in sessile cyemes

   2a. Scrambling shrubs; leaf apex acuminate;

   drupes black when ripe, 5-8 mm across;

   pyrenae 1-seeded

   ... 3. Z. oenoplia

   2b. Trees or erect shrubs; leaf apex rounded;

   drupes orange-red when ripe, 1.5-2 cm long;

   pyrenae 2-seeded

   ... 2. Z. mauritiana

Shrubs or small trees with young parts adpressed pubescent, unarmed. Leaves ovate-oblong, 3-8.5 x 2-4 cm, base oblique, strongly 3-nerved, acuminate at apex, serrate along margins, coriaceous, glabrous above, sparsely pilose along the main nerves beneath; stipular spines absent in mature plants, solitary or in pairs on young plants, villous; petals 6-15 mm long. Cymes up to 2.5 cm long, peduncled, pubescent, 5-10-flowered; flowers 3-5 mm across, greenish. Calyx lobes ca 2 mm long, hairy outside; petals subcucullate; disc 10-lobed with a pit at base of each lobe. Drupes ellipsoid, ca 1 x 0.6 cm; pyrenes usually unequally 2-celled; seeds compressed black.

**Fl. & Fr.:** May-October.

Fairly common. Sialsuk, Deb 30735 (CAL); Mualpheng, M. Sawmilliana 95572.


Small trees, up to 10 m tall with young parts rusty tomentose. Leaves variable, alternate, elliptic-oblong or suborbicular, 1.5-7 x 1-3.5 cm, base obliquely rounded, 3-nerved, rounded to subacute at apex, crenate to entire along margins, glabrous and shining above, densely grey or brownish tomentose beneath; stipular spines solitary or in pairs, usually straight; petioles 3-10 mm long. Cymes 1.5-2 cm across, sessile or sub sessile, axillary, densely tomentose; flowers 3-4 mm across, greenish-yellow; calyx lobes 1-2 mm long, densely tomentose outside, glabrous inside; petals subspatheolate, ca 1 mm long, concave; disc 10-lobed. Drupes obovoid-globose, 1.5-2 cm long, orange-red when ripe, pulpy, acidic; pyrenes solitary, 2-celled; seeds 1 or 2, compressed.

**Fl. & Fr.:** September-February.

Common, in deciduous forests at lower elevations; also cultivated in and around villages. Phairuang, K.P. Singh 94208; Tablabagh, K.P. Singh 94269.

*Use:* Fruits are edible.

Bushy, straggling or climbing, thorny shrubs with sarmentose branches. Leaves obliquely ovate or elliptic, 3.5-5.5 x 2-3 cm, base oblique, 3-4-nerved, acuminate at apex, finally serrulate or subentire to entire along margins, glabrous above and with appressed rufus hairy beneath on nerves; petioles 2-3 mm long; stipular spines solitary, recurved. Cymes up to 2 cm across, axillary, almost sessile or shortly peduncled (up to 3 mm); flowers greenish-yellow, 2-3 mm, across; calyx 1-2 mm long, pubescent outside; lobes ovate-acuminate; petals hooded, shorter than calyx; disc glabrous, 10-lobed. Drupes 5-8 mm across, ovoid-globose, black when ripe, edible; pyrenes usually 1 or rarely 2-celled, tubercled; seeds 1-2, 1 cm long.

Fl. & Fr.: August-February.

Common, along the roadside forests, shruberies etc. Mizoram hills, Leslie 38 (CAL); Bunglang, 75 m, Deb 31429; Mizoram hills, Dutta 33310 (CAL); Tuipui, K.P. Singh 94025; Deb 31429; Tut, on way to Mamit, 350 m, D.K. Singh 99006.

VITACEAE

(K.P. Singh)

1a. Petals 5, connate into a deciduous cap at the top
1b. Petals 4-5, free.

2a. Inflorescence cincinnus (tendril bearing)
2b. Inflorescence not cincinnus:

3a. Flowers mostly tetrameres:
4a. Flowers unisexual; stigma 4-lobed
4b. Flowers bisexual; stigma not 4-lobed

5a. Leaves simple; berries 1-seeded; seeds ellipsoidal or pyriform

...7. Vitis

...1. Ampelocissus

...6. Tetrastigma

...4. Cissus
3b. Leaves pedately 3-lobulate; berries 2-4-seeded; seeds hemispherical... 3. Ceyratia

3b. Flowers mostly pentamerosous:

6a. Leaves pinnate; disc cupular, sharply set off from the ovary... 2. Ampelopsis

6b. Leaves trifoliate; disc adnate to the ovary, hardly to be observed... 5. Parthenocissus

1. AMPELOCISSUS Planchon

1a. Weak creepers; young shoots, petioles and peduncles glabrous; leaves simple, glabrous beneath; flowers umbellately cymose... 2. A. sikkimensis

1b. Large woody climbers; young shoots, petioles and peduncles glandular hairy; leaves usually 3-lobed, densely brown tomentose beneath; flowers panicularly cymose... 1. A. barbata


Large woody climbers; branches terete, hollow, pubescent to tomentose. Leaves broadly ovate-cordate, 7-16 x 12-18 cm, deeply cordate at base, acute or acuminate at apex, irregularly sinuate-toothed along margins, not or obscurely 3-lobed, glabrate above, usually densely brown-tomentose beneath; base strongly 5-nerved; petioles 4-8 cm long, woolly-tomentose, glandular, intermixed with spreading blackish stiff hairs; tendrils leaf opposite, woolly, beset with long stiff hairs, 2-3-cleft, one brach transformed in a elongate, 6-10 cm long, laxly ovate panicles of cymes. Peduncles glandular, capitately hairy; flowers shortly pedicelled, ca 1.5 mm long, pentamerosous; style absent. Berries globose to elliptic, 8-12 x 5-8 mm, 1-2-seeded, fleshy, seeds ca 6 x 2 mm, laterally compressed, grooved on back.

Fl. & Fr.: May-September.

Common, in low level forests. Saliha, Dutta 33820.

Plants with weak trailing stems; young parts glabrous, terete, glaucous. Leaves simple, orbicular-ovate with reddish tinge, 7-27 x 6-27 cm, base rounded-cordate, abruptly acuminate at apex, cuspidately denticulate along margins, membranous, glabrous; petioles 5-13 cm long; tendrils branched. Panicles umbellately cymose; flowers 1-2 mm long, pentamerosous, greenish in buds; calyx 5- notched petals free, ca 1 mm long, oblong-ovate. Berries obovoid, 4-6 mm long, 2-4-seeded; seeds ellipsoid-obovoid ca 5 x 2 mm with a spathulate tubercle on back, one end pointed.

*Fl. & Fr.:* July-October.

Scarce, in moist places of evergreen forests. Sairep-Tawipui, *Dutta 33654.*

2. **AMPELOPSIS** A. Rich. *ex* Michaux


Fig. 70.

Climbing shrubs with branches and young parts pubescent. Leaves imparipinnate, 15-21 cm long; petioles 2-4 cm long; leaflets oblong or ovate, 7-11, 4.5-8 x 2.5-4 cm, base subcordate, acuminate to acute at apex, sharply serrate along margins, glabrous above, minutely pubescent beneath; lateral nerves 6-8 pairs; petioles 6-8 mm long; tendrils leaf opposed, bifid. Cymes corymbose, dichotomous, slightly villous; flowers 1-2 mm long, green, pentamerosous, umbellate, fragrant; calyx minute, cupular; petals ca 1 mm long; disc cupular at base, adnate to the ovary, irregularly lobed. Berries red, turning black, 2-4-seeded, ca 6 mm across; seeds obovoid with a convex back.

*Fl. & Fr.:* June-October.

Kolasib, Godfrey 546 (CAL); Lunglei, *Dutta 33376.*
Fig. 70: *Ampelopsis rubifolia* (Wallich) Planchon
3. **Cayratia** A.L. Juss.


Slender climbers with pubescent branchlets; tendrils slender, leaf opposed, simple or forked. Leaves pedately 5-foliolate; petioles 4-8 cm long; terminal leaflets larger than laterals; leaflets ovate to broadly lanceolate, elliptic-lanceolate or oblong-ovate, 3.5-9 x 2-5 cm, base acute or cuneate, oblique, acute to acuminate at apex, crenate-serrate along margins, glabrous at upper side, softly pubescent specially on the nerves beneath; lateral nerves 4-7 pairs; petiolules 5-15 mm long. Cymes 4-15 cm long, axillary, subcorymbose; dichotomously branched, pubescent; flowers 2-3 mm across, green, bisexual, tetramerous; calyx and petals pubescent outside. Berries 5-8 mm across, turbinate, globose, 3-4-seeded, white, turning purple; seeds trigonous, face ridged, back convex, rugose, tubercled.

*Fl. & Fr.*: April-June.

Common, in evergreen forests in shady places. 15th mile from Lunglei, *Gage* 140 (CAL); Demagiri; *Gage* 219 (CAL); Kolasib-Chumliang, *Dutta* 33289; Kolasib-Bhatravi road, *K.P. Singh* 93198; Sairep. *K.P. Singh* 96706; Dampa, *D.K. Singh* 99105.

4. **Cissus** L.

1a. Leaves tomentose beneath:

2a. Trichomes on lower side of leaves 2-armed; ovary glabrous at summit; ... 2. *C. arisata*

2b. Trichomes on lower side of leaves simple; ovary pubescent at summit; ... 1. *C. arihata*
Fig. 71: Cayratia japonica (Thumb.) Gagnepain
1b. Leaves glabrous or nearly so:

3a. Young shoots glabrous or mostly white;
calyx equal sided ... 3. C. repens

3b. Young shoots not merely white, 
calyx unequal sided

4a. Slender climbers, tendrils forked, leaves variegated ... 4. C. discolor

4b. Woody climbers, tendrils simple, leaves not variegated ... 3. C. assamica


Fig. 72.

Slender, climbing shrubs with rusty, pubescent branches; tendrils leaf-opposed, bifid, hard. Leaves simple, ovate to orbicular, 6-10 x 3-8 cm, base cordate, acute to acuminate at apex, bristly-serrate along margins, glabrescent above, rusty-tomentose beneath; basal nerves 3-5; lateral nerves 4-6 pairs; petioles 2-5 cm long. Cymes axillary, drooping, umbelliform; peduncles 2-7 cm long; flowers 3-4 mm across, greenish-yellow, tetramerous; sepals and petals pubescent outside. Berries obovoid. 6-8 mm across, blue-black, smooth, 1-seeded; seeds obliquely pyriform, ca 6 x 4 mm.

Fl. & F.r: June-December.

Scarce, in shady forests. Demagiri, 115 m, Gage 220, (CAI); s.loc., Dutta 33252; Kolasib-Bukpui road, K.P. Singh 93026.


Climbing shrubs with tomentose woody branches; tendrils branched. Leaves ovate, 5-12 x 4-10 cm, base truncate to cordate, acuminate at apex, bristly serrate along margins, glabrous to hairy above, arachnoid hairy beneath; petioles 2-8 cm long, pubescent. Cymes umbellate. 2-6 cm long.
Fig. 72: Cissus adnata Roxb.
axies; flowers ca 1.5 mm across, tetramerous; calyx cupular, hairy; petals hooded, oblong-ovate, pubescent. Berries ob-ellipsoid, ca 5 mm across; 1-seeded; seeds oblique at base, obovoid, ca 5 mm long.

Fl. & Fr.: July-January.

Recorded on the basis of Shetty & P. Singh (l.c.).


Woody climbers, glabrous; tendrils simple, hard. Leaves simple, ovate-orbicular to lanceolate, 6-12 x 3.5-8 cm, base cordate, bluntly acuminate at apex, bristly-serrate along margins, subcoriaceous, glabrous, strongly nerved beneath; basal nerves 5; lateral nerves 5-7 pairs; petioles 2-5 cm long. Cymes in axillary compound umbels; peduncles 2-4 cm long; flowers 3-4 mm across, greenish-yellow, tetramerous; sepals and petals glabrous. Berries obovoid-turbinate, 5-7 mm across, blue, turning black, 1-seeded; seeds pyriform, ca 5 x 4 mm, smooth.

Fl. & Fr.: July-November.


Slender climbers with a hard base and subangular, glabrous, red branches; tendrils forked. Leaves ovate-lanceolate, oblique, 6-14 x 3-7.5 cm, base cordate or submucinate, acute to acuminate at apex, bristly-crenate along margins, membranous, glabrous with white blotches on upper surface, purplish beneath; basal nerves 5-7; lateral nerves 3-4 pairs; petioles 1.5-3 cm long; stipules oblong. Cymes compound umbellate, leaf opposed;
Fig. 73: Cissus discolor Blume
peduncles 2-3 cm long; flowers 3-4 mm across, greenish-yellow, tetramerous; calyx cupular, fleshy; petals oblong, glabrous. Berries obovoid, 5-7 mm across; red, turning to black, 1-seeded; seeds globose-pyriform, ca 4 x 3 mm.

Fl. & Fr.: May-November.

Common, in study places. Tepaimukh, Kanjilal 4763; Sairang, 670 m, Deb 30588; Haurang, 670 m, Dutta 31393; Taitaw, 700 m, Dutta 33234; Kolasib-Bhairavi road, K.P. Singh 93183; Near Rawpui, K.P. Singh 93983; Phaileng. D.K. Singh 98973; Zotethlang, K.P. Singh 94591.


Spreading, climbing shrubs, glabrous; young shoots covered with white bloom; tendrils fleshy, forked. Leaves simple, ovate to triangular, 6-10.5 x 3-8.5 cm, base broadly cordate, acute at apex, bristly dentate along margins, membranous, glabrous; basal nerves 5-7; lateral nerves 3-4 pairs; petioles 4-7 cm long. Umbels compound, axillary; peduncles 3-6 cm long; flowers 3-4 mm across, greenish-red, tetramerous; calyx truncate; petals ovate. Berries globose-ellipsoid, 3-4 mm, red, turning black when ripe, 1-seeded; seeds globose, pyriform, ca 5 x 3 mm.

Fl. & Fr.: April-January.

Scarce, in moist places. Donkoma, Pangsal, Leslie 386 (CAL.); Sairang, Godfrey 514 (CAL); Saiha, Dutta 33826; Kawichaw, 600 m, K.P. Singh 92829.

5. **PARTHENOClUSSE** Planchon


Large, woody, climbing shrubs; tendrils absent or sometimes present then branched. Leaves 3-foliolate; petioles 5-11 cm long; sparsely pubescent; leaflets ovate, obovate or rhomboid, 8-12.5 x 3.5-7 cm, terminal more longer than laterals, base cuneate in terminal leaflets, but in laterals very oblique, outer half rounded or semicordate, inner half acute, abruptly acuminate at apex, sharply serrate along margins, shining glabrous above, lighter colour and often pubescent along the midrib and nerves beneath; petiolules 8-15 mm long; lateral nerves 6-8 pairs. Cymes 6-8 cm long, dichotomously branched, leaf opposed or terminal; flowers ca 3 mm long, yellowish-green or reddish-brown, bisexual, tetrameros, or rarely pentameros; calyx glabrous, angular, salver-shaped; petals oblong, glabrous with a conical hood. Berries globose, 7-8 mm across, black when ripe; 4-seeded; seeds black, ca 6 x 5 mm.

*Fl. & Fr.*: May-November.

Rather common, in evergreen forests in moist places. Lunglei, Prasper 1890, s.num. (CAL); Dutta 33371.

6. **TETRASTIGMA** (Miq.) Planchon

1a. Leaves digitately 3-5-(-6)-foliolate:

2a. Petals with a dorsal supur:

3a. Leaves 3-foliolate; petals ca 1 mm long; ovary glabrous; berries globose ... *2. T. brachyolatum*

3b. Leaves (3-) 5-foliolate; petals ca 2.5 mm long; ovary pubescent; berries ellipsoidal ... *6. T. obovatum*

2b. Petals without a dorsal supur:

4a. Flowers rusty pubescent; berries oblong-ellipsoid, less than 10 mm long ... *3. T. campylocarpum*

4b. Flowers not rusty pubescent; berries globose, more than 10 mm across:

5a. Leaves 3-foliolate; leaflets petiolulate ... *1. T. angustifolium*

5b. Leaves 5-foliolate; leaflets almost sessile ... *7. T. obtectum*
1b. Leaves pedately 3-5-foliolate.

6a. Berries turbinate-globose  ...  8. T. rumicispermum
6b. Berries globular-ovoid.

7a. Style present; stigma 4-rayed  ...  4. T. dubium
7b. Style absent; stigma 4-lobed:

8a. Large himas; branches thick; tendrils simple  ...  5. T. leucostaphyllum
8b. Weak climbers; branches slender; tendrils forked at tips  ...  9. T. serrulatum


Slender, herbaceous climbers with flattened glabrous stems; tendrils simple, leaf opposite, slender. Leaves 3-foliolate, glabrous; petioles 2-7 cm long; leaflets elliptic-lanceolate, 5-12 x 2.5-4.5 cm, terminal larger than laterals, base obliquely rounded to acute, acute to acuminate at apex; distantly serrate along margins, glabrous above, puberulous on the nerves beneath; lateral nerves 5-7 pairs. Cymes axillary, densely corymbose, shortly peduncled; peduncles pubescent; flowers 2-3 mm across, greenish-yellow; calyx subtruncated; petals oblong, hooded, pubescent. Berries globose, 4-6 mm across, black when ripe, 2-4-seeded; seeds furrowed on each face, rugose on sides, ca 5 x 4 mm.

Fl. & Fr.: February-December.

Near Fort Lungleh, Gage s.num. (CAL); Aizawl, Deka 23463.

Climbers; stems woody, glabrous; tendrils simple. Leaves 3-foliate; petioles 5-7 cm long; leaflets ovate or ovate-lanceolate, 4-10.5 x 3.5-6 cm, base rounded or cuneate in terminal leaflets, oblique in laterals, acuminate at apex, cuspidate-serrate along margins, membranous, glabrous above, puberulous on nerves beneath; lateral nerves 5-10 pairs; petiolules 5-15 mm long. Cymes 6-10 cm long, axillary, pubescent, corymbose with divericate ramifications; flowers ca 1 mm across, tetramerous, dioecious, whitish, pubescent outside, petals oblong-ovate with a dorsal spur at apex, ca 1 mm long; style absent; stigma 4-lobed. Berries globose, 5-7 cm across, black when ripe, 1-3-seeded; seeds ± horizontally wrinkled, obvoid, ca 6 x 5 mm.

**Fl. & Fr.:** August-March.

**S. loc., Parry s.n.** (CAL); North Vanlaiphai, D.K. Singh 93061.


Large, fleshy climbers with terete stems; tendrils simple, leaf opposed, hard. Leaves digitately 3-6-foliate, glabrous; petioles 6-10 cm long; leaflets elliptic, ovate or obovate, 4.5-10 x 2.5-5 cm, base oblique, acute; acuminate at apex, cuspidate-serrate along margins, coriaceous, glabrous; lateral nerves 4-8 pairs; petiolules 10-15 mm long. Cymes axillary, 5-7 cm long, dichotomously branched, subcorymbose, puberulous, shortly peduncled; flowers 3-4 mm across, tetramerous, dioecious; calyx cupular, rusty pubescent; petals incurved at apex; style absent; stigma 4-lobed. Berries obovate-ellipsoid, 10.5 x 6-7 mm, brown, smooth, usually 1-seeded; seeds cylindrical, striate, obovate-ellipsoid, 10-12 mm long.

**Fl. & Fr.:** December-May.

**Tepuiinhkl, Kanjilal 4778** (CAL).

ex Prain, Bengal Pl. 337. 338. 1903; Kanjilal et al., Fl. Assam 1: 209, 1936.

Climbing shrubs, glabrous; branches striate; tendrils leaf opposed, simple. Leaves pederately 3-5-foliolate; petioles 4-8 cm long; leaflets 5-10.5 x 2-6 cm, terminal larger, elliptic to ovate-lanceolate or oblanceolate, base rounded, oblique, bluntly long acuminate at apex, inciso-serrate along margins, glabrous on both sides; petiolules 3-15 mm long; lateral nerves 7-10 pairs. Cymes 3-6 cm long, compact, axillary, subcorymbose to corymbose; flowers 2-3 mm across, pale to yellowish-green, tetramerous, polygamo-dieious; style 4-rayed. Berries globose, 6-8 mm across, black when ripe, 1-2-seeded; seeds rugose, oblong-ellipsoid, c. 7 mm long.

Fl. & Fr.: February-May.

Common, in evergreen forests in shady places. Chinchip, 1500 m, Parry 225 (fide C.E.C. Fischer, i.e.); Ghutter woorth hills, Pracer s.n. (CAL): on the way to Bukpui. K.P. Singh 93025; Hnathial, K.P. Singh 96906.


Large climbers with flat woody stems; tendrils simple, leaf opposed, stout. Leaves pederately 5-(-7)-foliulate; petioles 5-12 cm long; leaflets ovate or lanceolate, 6.5-14 x 3-6.5 cm, terminal largest, base obliquely acute, acute to acuminate at apex, dentate-serrate along margins; variaceous, glabrous; lateral nerves 8-10 pairs; petiolules 5-15 mm long. Cymes 4-7 cm across, axillary, subcorymbose; female cymes smaller than males; flowers 3-5 mm across, pale green, unisexual; calyx cupular, ciliate-pubescent at margins; petals ovate-oblong, pubescent; style absent. Berries globose, 1.5-2.5 cm across, smooth, brownish-red; seeds 1-2, subpyriform, 6-8 mm across, wrinkled, plano-convex.
Fl. & Fr.: February-September

Common in evergreen forests in shady places. Valley in jungle, Fort Lungleh, 900-1010 m, Gage 8 (CAL); Mizoh hills, Dutta 33436; Kolasib-Building road, K.P. Singh 93145; Lalled, 850 m, D.K. Singh 98809.

Uses: Fruits are eaten by the local people.


Large climbers with flattened, pubescent stems; tendrils leaf opposite, simple. Leaves digitately (3)-5-foliolate; petioles 8-15 cm long, covered with brown hairs; leaflets obovate or elliptic, 7-16 x 5-10 cm, base acute to cuneate; acuminate at apex, crenate-serrate along margins, glabrous above, glandular-filous pubescent specially on the nerves beneath; lateral nerves 7-9 pairs; petioles 1.5-2.5 cm long. Cymes umbellate, divaricately or trichotomously branched, subcorymbose, shortly peduncled; flowers 3-5 mm across, greenish-yellow; calyx cupular, 4-toothed, pubescent; petals hooded, pubescent. Berries ellipsoid-globose, 1.5-2 cm across, black, 1-3-seeded; seeds ellipsoid, 10-12 mm long, plano-convex.

Fl. & Fr.: January-November.

Scarce, in moist forests. Taipang, 1200 m, Parry 472 (side C.E.C. Fischer, 1938).

Uses: Fruits edible.

Note: The species was recorded as Cayratia obovata by C.E.C. Fischer, l.c. (1938), that is not a valid name.

Climbers; young branches slender and rusty-hirsute; tendrils short, branched, slender. Leaves digitately 5-foliolate; petioles 2.5-4 cm long; leaflets ovate, elliptic or obovate, 3-5 x 1.5-2.5 cm, laterals much smaller than the terminal, base oblique or acute, acuminate at apex, cuspidate-serrate along margins. Almost sessile, glabrous; lateral nerves 5-8 pairs. Flowers in umbellate cymes, tetramerous, ca 2.5 mm long, unisexual; calyx cupular, ciliate at margins; petals oblong-ovate, ca 2 mm long, hooded; style absent. Berries globose, 1-seeded; seeds ca 7 mm long, rugose.

Fl. & Fr.: April-September.

Recorded on the basis of C.E.C. Fischer (l.c.).


Lianas with terete and warty stems; tendrils bifid. Leaves pedately 5-(-3)-foliolate, glabrous; petioles 4-7 cm long; leaflets ovate-oblong to oblancoolate, 3-8 x 1.5-3 cm, base obliquely acute to cuneate, shortly acuminate at apex, sharply serrate at margins, glabrous; lateral nerves 8-10 pairs; petioles 2-10 mm long. Cymes axillary and terminal. 8-10 cm long, subcorymbose; peduncles up to 5 cm long; flowers 3-4 mm across, pale green, tetramerous; calyx 4-lobed, cupular petals oblong, ca 2 mm long. Berries globose, 8-10 mm diam., turbinate, reddish-black, minutely tubercled below the middle, 1-4 seeded; seeds obovolate, 5-7 mm long.

Fl. & Fr.: April-September.

Common, in evergreen forests. Tawiwaw, *Duka* 33238; Sairep, *Duka* 33508; Thalthlang, *Duka* 33967.

Fig. 74: *Tetrastigma ruminispermum* (M. Lawson) Planchon
Kanjikil et al., Fl. Assam 1: 299. 1936 (as capriolata). Renne (Lushai).

**Fig. 75.**

Wiry climbers, glabrous; tendrils often with adhesive discs, simple or forked. Leaves pedately 5-foliolate; petioles 2-6 cm long; leaflets rhomboid to obovate or lanceolate, 4-9.5 x 2-3.5 cm, terminal largest, base obliquely acute to cuneate, cuspidate-acuminate at apex, sharply serrate at margins, glabrous; lateral nerves 5-10 pairs; petiolules 2-13 mm long. Cymes terminal or axillary, 5-7 cm long, umbellate, glabrous; peduncles 1.5-3.5 cm long; flowers 4-5 mm across, green, tetramerous; calyx glabrous, truncate; petals thickened at apex; style absent; stigma 4-lobed. Berries globose, 5-10 mm across, reddish-brown; seeds 2-4, obovoid, ca 5 x 3 mm.

**Fr. & Fr.:** January-December.

Common, in evergreen forests. N. Lungleh, Helio hills, 960 m, Gage 104 (CAL); Pangsal-Thlimthing, 900 m, Leslie 39b (CAL); Saithah, D.K. Singh 98817.

**Uses:** Berries edible.

7. **VITIS L.**


Climbers with glabrous, warty stems; tendrils simple, leaf opposed, wairy. Leaves 3-foliolate; petioles 3-10 cm long; leaflets ovate-lanceolate, 5-12 x 3-5.5 cm, base acute to cuneate, shortly acuminate at apex, entire to serrulate upwards along the margins; glabrous on both surfaces; lateral nerves 4-7 pairs; petiolules 3-7 mm long. Cymes dense, compact, axillary; flowers 1.5-2 cm across. Berries globose, brown, 1-3 seeded, seeds obovoid.

**Fl. & Fr.:** May-September.

Scarce, in evergreen forests. Bualpui, Dutta 33874; Saithah, D.K. Singh 99281.
Fig. 75: *Tetragonia serrulatum* (Roxb.) Planchon
LEEACEAE

(K.R. Singh)

LEEAE Van Royen ex L.

1a. Flowers bright red
1b. Flowers white or greenish-white or yellowish:

2a. Leaves large, simple or sometimes 3
2b. Leaves variously pinnate:

3a. Stems and petals winged or crisp winged:

4a. Both stem and petals crisp winged; bracts small
4b. Only petals winged at the base; bracts very conspicuous

3b. Stems and petals not winged:

5a. Leaves glabrous, often pinkish; not gland dotted beneath
5b. Leaves pubescent or hairy along the nerves; not pinkish; densely gland dotted beneath


Shrubs, 2-3 (10) m tall; young parts ± brown, tomentose. Leaves up to 1 m long, (1-) 2 (-3) pinnate; petioles 6-12 cm long; leaflets oblong-lanceolate or oblong-elliptic, 10-25 × 3-5.5 cm, base rounded or acute, sometimes oblique, long acuminate at apex, sharply serrate along margins, scabrous above, grey hairy beneath, hirsute along the nerves, copiously gland dotted; lateral nerves 8-14 pairs; petiolules up to 7 mm long. Umbels 3-12 cm long, tawny pubescent, subterminal; flowers 4-6 mm across, 5-merous, greenish-white or brownish; calyx puberulous or glabrous, petals ca 2 mm long. Berries globose, 7-10 mm across, depressed smooth, ± 6-lobed, pinkish or red when ripe, 3-6-seeded.
Fl. & Fr.: May-November.

Common, in dense evergreen, moist forests. Upper Thenzawl, K.P. Singh 93920; Tuipui, K.P. Singh 94016.


Undershrubs or shrubs, 1-8 m tall; stems, branches, petioles, petiolules, rachis and peduncles crisply winged. Leaves 15-35 cm long, 1-2-pinnate, crisp winged; petioles 1-2 cm long, leaflets elliptic, ovate-oblong or oblong-lanceolate, 3-7, 6.5-11 x 2-4 cm, base rounded, acuminate at apex, serrate along margins, glabrous above, minutely pubescent on the nerves beneath, coriaceous; lateral nerves 10-20 pairs, parallel, straight; petiolules 5-10 mm long. Corymbs 3-5 cm long, axillary, solitary or paired; flowers ca 5 mm across, greenish-white or pale yellow; calyx glabrous; petals 2-3 mm long. Berries depressed-globular, 7-8 mm across, smooth, black. 5-6-seeded.

Fl. & Fr.: June-October.

Sairang road at 6th mile, B. Godfrey 501 (CAL).


Evergreen, straggling shrubs, up to 5 m high; young parts brown tomentose. Leaves trifoliolate or units bipinnate; petioles winged at the base, 4-6 cm long; leaflets ovate-elliptic or oblong-lanceolate, 7-15, 15-35 x 8-15 cm, base rounded; acuminate at apex, serrulate at margin, glabrous above, pubescent beneath; lateral nerves 8-20 pairs; petiolules up to 1 cm long. Inflorescence 5-12 cm long, congested with bright red pubescent bracts and numerous ovate bracts. Flowers greenish-white; glabrous to pubescent; calyx glabrous to pubescent; petals ca 3 mm long.
Berries depressed-globose, 8-10 mm across, orange-yellow, black when ripe. smooth, 5-6-seeded.

*Fl. & Fr.* May-December

Recorded on the basis of Kanjilal *et al.* (*l.c.*).


Herbaceous shrubs or small trees, up to 5 m or little more high; stems annulated, glabrous or sparsely pubescent. Leaves large, variable, 2 or 3, rarely 4-pinnate; rachis 20-50 cm long; leaflets many, ovate to ovate-lanceolate, 8-16 x 3.5-8.5 cm, base cuneate, acuminate at apex, setose, serrate along margins, glabrous or under surface sparsely pubescent; lateral nerves 8-10 pairs; petiolules 4-10 mm long; stipules caducous. Corymb puberulous, coral red; peduncles 4-10 cm long. Flowers ca 2 mm across, red, crowded; calyx 5-lobed, glabrous or pubescent, campanulate; petals 5, connate at the base. Berries globular, 6-8 mm across, depressed, orange-red, supported by a persistent calyx. Usually 6 or fewer seeded; seeds smooth, convex on the back.

*Fl. & Fr.* May-February.

Common, in evergreen forests in moist places. Parry, s.num. (CAL); Kolasib-Builang Road, K.P. Singh 93146; Phairuang, K.P. Singh 94201.


Large shrubs or small trees, up to 5 m high; branches glabrous. Leaves 2-3-pinnate, 30-130 cm long; petioles purple, 15-20 cm long; leaflets oblong, ovate-lanceolate or ovate-oblong, 5-20 x 2-8 cm, base rounded, caudate-
acuminate at apex, sharply serrate at margins; glabrous to subrugose; petiolules 5-20 mm long; lateral nerves 7-12 pairs. Cymes 10-15 cm long, in subterminal corymbs, glabrous to pubescent; peduncles rusty-villous, ca 5 cm long; flowers 5-merous, ca 0.7 cm across, pale green; calyx lobes 2-4 mm long, glabrous or pubescent; petals ca 3 mm long; staminal tube white. Berries depressed, 5-8 mm diam., red or black when ripe, 3-6-seeded.

Fl. & Fr.: April-December.

Lungleh 900 m, Cage 85 (CAL); Kheitum, Deb 31223; Aizawl to Haitaw, Datta 33323; North Vanlaiphai, D.K. Singh 93081; Leite, K.P. Singh 94094.


Perennial herbs or semi-herbaceous shrubs, up to 2 m high; young branches, petioles, rachis and inflorescence hairy to mealy pubescent. Leaves variable in shape and size, foliolute and then leaflets broadly ovate or elliptic, 15-50 cm long with cordate base, lower ones sometimes larger or 1-3-pinnate, and then leaflets numerous, oblong, ovate-lanceolate, 10-24 x 7-8.5 cm, rounded or subcordate at base, acute at apex, dentate-serrate along margins, coriaceous, glabrous above, greyish puberulous or mealy pubescent beneath; petiolules up to 20 mm long; lateral nerves 9-12 pairs, straight. Corymbs 20-30 cm long, puberulous; flowers greenish-white; calyx 1.5-3 mm long, nearly pubescent; petals 3-4 mm long, pubescent to papillose. Berries depressed, 5-10 mm across, black when ripe, smooth, 5-6-seeded; seeds ca 4 x 3 mm.

Fl. & Fr.: August-March.

Between Aizawl-Sonai. Leslie 30 (CAL); Haathial, 750 m, Mao 107052.
SAPINDACEAE

(D.K. Singh)

1a. Leaves simple; fruits compressed and winged
    ... 5. Undainsecen

1b. Leaves compound; fruits neither compressed nor winged:

   2a. Leaves palmately compound
       ... 1. Allophylus

   2b. Leaves pinnately compound:

      3a. Petals absent or very small
          ... 5. Mischnophyllum

      3b. Petals present:

         4a. Fruits tuberous or muricate:

            5a. Panicles glabrous; sepals imbricate; fruits ellipsoid
                ... 7. Xerophyllum

            5b. Panicles puberulous or tomentose; sepals valvate; fruits globose
                ... 2. Dimorrhophyllum

        4b. Fruits not tuberous:

           6a. Petaline scales on the back with a pilose crest; ovary hairy; cocci obtong
                ... 4. Leptanthus

           6b. Petaline scales without a crest; ovary glabrous; cocci glabrose
                ... 6. Sapindus

1. ALLOPHYLUS 1...

   1a. Leaflets glabrous
       ... 1. A. subfalcatus

   1b. Leaflets tomentose:

      2a. Branchlets glabrous
          ... 2.1. A. villosus f. aporeticus

      2b. Branchlets densely hairy
          ... 2.2. A. villosus f. villosus


   Woody shrubs, 3-5 m high; leaves alternate, trifoliolate; rachis 5.5-17 cm long; leaflets highly variable, elliptic, oblanceolate or oblong-lanceolate.
7.5-18 x 2.5-8 cm, base oblique-cuneate, acuminate at apex, crenulate along margins, glabrous to glossy; petiolules ca 5 mm long; lateral nerves 10-14 pairs. Racemes dense flowered, simple, up to 8 cm long; flowers greenish-white, minute, ca 0.25 cm across; sepals 4 in opposite pairs, ca 1 mm long, outer smaller, inner caudate, imbricate; petals white, cuneate. Capsules with globose cocci. glabrous; cocci orange-red when ripe.

Fl. & Fr.: Apparently throughout the year.

Parry s.lc. and mm. (fide C.E.C. Fischer l.c.).


Shrubs, 1-2 m high; branchlets glabrous. Leaves trifoliolate; rachis 2-8 cm long, glabrous; leaflets 3, oblong-ovate to oblanceolate, 9-18 x 3-6 cm, acute or cuneate at base, acute to acuminate at apex, serrulate-dentate at margins, glabrous above, villous beneath; petiolules 5-10 mm long; lateral nerves 10-15 pairs. Racemes solitary, axillary, simple to occasionally branched, 4-18 cm long; flowers pale whitish-yellow, ca 2 mm across; sepals 4, ca 1 mm long; petals 4. Capsules with globose cocci, glabrous, orange-red when ripe; cocci ca 7 mm in diam.

Fl. & Fr.: August-December.

Scarc in the area. Sabual, 1000 m. D.K. Singh 99035.


Shrubs, 2-3 m high; rachis 4-12 cm long, villous-hairy; leaflets 3-5, oblong, oblanceolate, lanceolate, broadly elliptic-lanceolate, 8-24 x 4-10 cm, base subequally cuneate, acute to acuminate at apex, serrate along margins, glabrescent above, villous beneath; lateral nerves 10-15 pairs; petiolules
Fig. 76: Allophylus villosus (Roxb.) Blume f. aporeticus (Voigt ex Kurz) Mukerjee
short, up to 5 mm long. Racemes simple, axillary, solitary, 3-9 cm long; flowers yellowish-green or dull white, ca 0.25 cm across. Capsules with subglobose cocci, glabrous; cocci 0.7-0.8 cm across, orange-red, pilose.

Fl. & Fr.: February-August.


Uses: Aril is sweet delicious and edible. Plant is also used for fermentation.

2. DIMOCARPUS Lour.


Medium-large evergreen trees, up to 25 m tall; young parts ferruginous, stellate tomentose; crown large, spreading, more or less ovoid. Leaves alterante. 10-30 cm long; leaflets 4-10, sub-opposite, variable, oblong or ovate-lanceolate, 4-15 x 1-5 cm, base oblique-cuneate, acute or obtuse at apex, entire along margins; glabrous above, glaucous and glabrous beneath, coriaceous; panicles up to 12-25 cm long, terminal or axillary, rusty tomentose; flowers pale or yellowish-white, 0.4-0.6 cm across, polygamous; sepals 5-6, ovate, 2 3 mm long, valvate, acute at base, yellow, pubescent; petals 5-6, lanceolate-spatulate, 2.5-4 mm long, pilose at base; disc velutinous; ovary 2-3-lobed, 1-celled. Fruits tubercled, globose, 1-2 cm across, purplish-red.

Fl. & Fr.: February-August.

Lungleh, 1300 m, Parry 287 (fide C.E.C. Fischer l.c.).

3. DODONAEA L.

Small, evergreen, resinous shrubs, up to 3 m high; stems terete-angulate, glabrous. Leaves alternate, sub-sessile, extipulate, oblanceolate or broadly elliptic, 2-6 x 0.6-2 cm, base cuneate-attenuate, subapiculate at apex, revolute, entire along margins, glabrous and white dotted on both sides, viscid with a shining yellow fluid, coriaceous. Panicles terminal, up to 6 cm long, short; flowers polygamous, minute, yellowish-green; sepals 5, oblong, ca 3 mm long, glabrous; petals absent; stamens 8; filaments short; anther linear-oblong. Capsules compressed, glabrous, 1-1.3 x 1-1.6 cm, membranous, 2-4-winged, septicidally 2-4-valved, 1-2-seeded; seeds black.

Fl. & Fr.: February-August.

Cultivated as hedge plant. North Vanlaiphei, 1470 m, Deb 31112.

4. **LEPISANTHES** Blume

1a. Flowers ca 2 mm across, red; petals as long as sepals ... 1. *L. senegalensis*

1b. Flowers 2-4 mm across, white; petals longer than sepals ... 2. *L. tetraphylla*


Evergreen shrubs or small trees, attaining a height of up to 8 m; bark minutely fissured, greyish-dark brown. Leaves alternate, crowded at the end of the branches, usually paripinnate, rarely unifoliate; leaflets 8-10, subopposite, ovate-lanceolate, elliptic-oblong, 10-20 x 4-6 cm, base rounded-subcuneate, acute or acuminate at apex, entire along margins, glabrous on both surfaces; petiolules 5-10 mm long. Panicles terminal, axillary, up to 25 cm long, puberulent; flowers small ± 2 mm across, red, glabrous; sepals 5, ca 0.15 cm long, ciliolate; petals 5, ciliolate. Fruits ellipsoid, 1.5-2.5 cm long, red or deep purple; aril edible.
Common, in shady dense forests. Aizawl, 1000 m, Parry 618 (side C.E.C. Fischer, t.c.); Dariak, Deb 3404, 3420; Aizawl protected forest, 1050 m, Deb 30540; Sairang, 660 m, Deb 30604; Kawnpui, K.P. Singh 97025, 97050, 97051, 97063; Changsili hills, ca 1/4 mile from Stockade towards North, Prazer (1890), s.num. (CAL); Serzawl, ca 1300 m, M. Sawmilana 101751.

Uses: Fruits used as medicine for dysentery.


Mostly shrubs or sometimes trees, up to 10 m tall; twigs variably hairy. Leaves compound, paripinnate; petioles 30-35 cm long; leaflets 4-8, subopposite to alternate, widest above, lanceolate-oblung, 5.5-13 x 2-3.5 cm, base slightly oblique to equal sided, acute to rounded or subcordate, variably acuminate at apex, entire along margins, coriaceous, glabrous and shining; lateral nerves many pairs; petiolules 2-3 mm long. Racemes fascicled, axillary, 3-8 cm long, dark brown, pubescent; flowers white to greenish-white, sweet scented, 2-4 mm across; sepals 5, outer 2 smaller, ovate or elliptic, ca 5 x 4 mm, densely ciliate, inner 3 sepals ovate to obovate, ca 5 x 5 mm; petals 5, 5-6 mm long, broadly spatulate, scales bilobed, outside sericeous. Fruits flattened, ellipsoid, 1.3-5.5 mm across, smooth, densely hairy outside; seeds brown, glabrous.

*Fl. & Fr.:* February-November.

Scarcely distributed in the hilly forests. Near fort Lungleh, 900-1200 m, Gage 185 (CAL).

5. *MISCHOCARPUS* Blume


Large, evergreen trees, up to 20 m tall with a narrow crown; young branches reddish, puberulous. Leaves alternate, paripinnate, 15-40 cm long; leaflets 2-4 pairs, alternate to sub-opposite, elliptic or oblong-lanceolate, 8-27 x 3-8 cm, rounded or cuneate at base, laxly acuminate at apex, entire along margins, glabrous, chartaceous; shining above; petiolules short, 3-5 mm long. Panicles axillary, or subterminal, minutely rusty tomentose, bracteolate, flowers yellowish-green, 3-4 mm across, pentamerosus, pubescent; sepals 5, often connate at base, subvalvate; petals very small or absent; stamens 8, exserted; filaments pubescent. Capsules stipitate, pyriform, 1.5-2 cm across, 3-4 ribs, red; seeds arillate, ellipsoid-globose.

Fl. & Fr.: April-August.

Scarce in the area. Satha, Dutta 33819.

6. SAPINDUS L.


Small, deciduous trees, up to 13 m high with globose, spreading crown; bark greenish brown with fine lenticels and fissures; branchlets tomentose. Leaves paripinnate, 30-50 cm long, crowded at the branch ends; leaflets 10-18, alternate-subopposite, 5-12 x 1.5-5 cm, base oblique-cuneate, acuminate at apex, entire along margins, coriaceous, glabrous; lateral nerves 12-22 pairs; petiolules 3-6 mm long. Panicles terminal, 25-35 cm long, pubescent; flowers polygamous, ± 3 mm across, white or purplish-white; sepals 4-5, ciliate; petals 5, with a woolly scale on either side; stamens 8 with woolly filaments and exserted anthers. Fruits tisesty or coriaceous; pericarp and endocarp saponaceous, wrinkled and often translucent; seeds globose, 8-12 mm across, black.

Fl. & Fr.: May-March.
Fig. 77: Sapindus mukorossi Gaertner
Scarce. North Vanlaiphai, Deb 31164: Aizawl, 1100 m, Parry 629 (fide C.E.C. Fischer in l.c.).

Uses: Fruits are used by Lushais (local tribe) as substitute for soap.

7. XEROSPERMUM Blume


Medium sized, evergreen trees, up to 15 m tall; crown dense, oval; young shoots terete, pubescent; bark brownish-black. Leaves alternate, pinnate, exstipulate, 15-30 cm long; petioles 2-4 cm long; leaflets almost opposite, (1) 2-4, oblong or elliptic-lanceolate, 7-13 x 2-5 cm, base acute-cuneate, acuminate at apex, entire along margins, glabrous, coriaceous; lateral nerves 10-12 pairs; petiolules 3-7 mm long. Racemes panicled, axillary, 7-10 cm long, simple to branched; flowers small, light yellow or greenish, 2-3 mm across; calyx 4-8-lobed, imbricate, in 2 series, outer ciliate; petals 4, ciliate, basal scales absent; stamens usually 5-10, inserted in pubescent disc. Fruits dark brown, ellipsoid, 2-2.5 x 1.5-2 cm, muricate, with pyramidal scales; seeds pilose.

Fl. & Fr.: April-March.

Rare, in dense forests. Sairep, Dutta 33541.

HIPPOCASTANAECIEAE

(D.K. Singh)

AESCUS L.


Fig. 78.
Fig. 78: Aesculus assamica Griffith
Medium sized, handsome, deciduous trees with glabrous, terete branches; bark slightly greyish, warty. Leaves opposite, digitate, exstipulate, up to 60 cm across; petioles 16-30 cm long, terete, glabrescent; leaflets 5-8, oblong-elliptic, 12-26 x 4-6 cm, terminal one largest, base narrowed, long acuminate at apex, slightly arched, glabrous, delicately serrate along margins; petiolules 1-2.5 cm long. Panicles erect, thyrsoid up to 60 cm long, pale brown, arising from the base of leaf clusters; flowers creamy-white, 2-2.5 cm across; calyx campanulate, 5-8 mm long, 5-lobed, pubescent; petals 4, unequal, clawed, pubescent outside; stamens 2-3 cm long. Fruits a loculicidal capsule, rugose, rusty brown, ovoid obvoid, 5-7.5 cm long; apiculate; seeds brown, 2.5 mm long, 1 in each cell.

Fl. & Fr.: April-September.

Occurs scarcely in the area, Lungchhuan (near North Vanlaithai), D.K. Singh 97163.

ACERACEAE

(D.K. Singh)

ACER L.

1a. Leaves simple with 3-basal nerves;
    wings of samaras always divergent:

2a. Leaves green on both surfaces;
    petioles up to 1.5 cm long
    ... 2. A. laevigatum

2b. Leaves silvery white or grey beneath;
    petioles up to 9 cm long:

3a. Cymes glabrous; samara wings 3 x 1.4-1.5 cm
    ... 3. A. laurinum

3b. Cymes pubescent, samara wings 2.5 x 0.6-1 cm
    ... 4. A. oblongum

1b. Leaves lobed with 5-7-basal nerves;
    wings of samaras either straight or divergent:

4a. Leaves 3-lobed with 5 basal nerves,
    samara wings straight
    ... 5. A. thomsonii

4b. Leaves 5-lobed, sometimes 7-lobed with
    5-7 basal nerves; samara wings divergent
    ... 1. A. cappadocicum

Large deciduous trees, up to 20 m tall. Leaves alternate, 5-lobed, 4-12 x 6-18 cm, base truncate or subcordate, 5-7-nerved; lobes equal, ovate, sinuses rounded, apex acuminate, entire along margins, glabrous, underside hairy at the axil of nerves at base; petioles 3-5 cm long. Panicles corymbose, terminal, appearing with leaves, 5-15 cm long; flowers yellowish-green; petals equalling the calyx; stamens 3. Samaras 3.5-5 cm long, compressed, dibract or subhorizontal, glabrous; wings diverging in a straight line, sinuous.

Fl. & Fr.: April-September.

Recorded on the basis of Nayar & A. Dutta (l.c.). According to them it is the commonest Himalayan Maple, distributed from Kashmir to farthest end of eastern Himalaya.


Medium-large, deciduous trees, up to 15 m tall with irregularly oval, spreading crown; bark dark greyish-green. Leaves simple, oblong, ovate or elliptic-lanceolate, 5-12 x 2.5-5 cm, base rounded or subacute, acuminate at apex, glabrous, entire to minutely serrulate along margins, glabrous, chartaceous; lateral nerves 6-9 pairs; petioles 1.5-1.8 cm long. Racemes subcorymbose or panicled, glabrous, appearing with leaves terminal, 5-10 cm long; flowers white; sepals 5, ovate-lanceolate, ca 2 mm long, purplish-green; petals 5, obovate, clawed; ovary pubescent. Samaras glabrous; nuts elliptical, almost terete reticulate; wings 1.5-3 x 0.5-0.8 cm, divergent, reddish when young.

Fl. & Fr.: March-November.

S.loc., Parry s.n. (fide C.E.C. Fischer, l.c.).

Large trees, 30-45 m tall. Leaves simple, opposite, oblong or obovate-oblong to ovate-elliptic, 8-14 x 3.5-5 cm, base rounded or cuneate with 3 basal nerves, abruptly acuminate at apex, entire along margins, glabrous above, silvery white or grey beneath, coriaceous; lateral nerves 7-9 pairs; petioles 2-4 cm long, terete, glabrous. Panicles corymbose, glabrous, 3-5 cm long, appearing with leaves; terminal, flowers small, yellowish-green, sepals lanceolate or oblong, 2.5-3 mm long, white; petals equal to sepals. Samaras glabrous, 3-3.5 cm long; wings constricted at base, ca 3 x 1.4-1.5 cm, slightly divergent, much veined.

*Fl. & Fr.*: August-May.

Scarce, distributed. Thaitlang, Wadhwa 96833.


Medium, deciduous trees, 8-15 m tall, often irregularly buttressed at base; bark brownish, laxly furrowed. Leaves opposite, often ternate in young shoots, oblong-elliptic or ovate-lanceolate, 5-18 x 3-6 cm, base rounded-obtuse, long acuminate at apex, entire along margins, chartaceous, glaucous beneath; lateral nerves 6-3 pairs, petioles 2-6 cm long, slender, terete. Cymes panicled, 6-12 cm long, corymbose, terminal or lateral, contemporary with leaves, pubescent; flowers white, 3-4 mm across; sepals and petals linear-oblong, ca 2 mm long. Samaras pale brown, 2.5-3 cm long, glabrous, 2-winged; nuts ± angular; wings divergent ca. 2.5 x 0.6-1 cm, constricted at base, closely veined.

*Fl. & Fr.*: May-February.

Common, along the road side as well as inside forests. Kawthkul-Tuichang, D.K. Singh 94429; Pheileng, K.P. Singh 97060.

Fig. 79.

Large trees. Leaves 3-lobed; middle lobe broadly triangulate, larger than the laterals, 9-18 x 5-16 cm, base cordate, 5-nerved, acuminate at apex; entire, repand or serrate along margins; coriaceous, glabrous on both sides; petioles 5-17 cm long, canaliculate. Racemes lateral, spicate, 7-21 cm long, appearing with leaves; flowers pentamorous, yellowish-green; sepals elliptic-ovate, ciliate; petals linear-oblong, ciliate. Samaras brown, 5-8 cm long; wings straight, 6-7 x 2.3-2.8 cm, base narrow.

Fl. & Fr.: November-July.

Scarce in the area. 15th mile S.E. of Lungleh, Gage 138 (CAL); Thechirai, Deb 31260.

STAPHYLEACEAE

(D.K. Singh)

TURPINIA Venetant, nom. cons.

1a. Shrubs or small trees, not exceeding 7 m in height;  
leaves 3-5-foliolate; margins serrulate;  
fruits less than 1.5 cm across

...1. T. cochinchenis

1b. Small-medium trees, 15-20 m in height;  
leaves 5-9-foliolate; margins serrate;  
fruits more than 1.5 cm across

...2. T. pomifera


Fig. 80.

Shrubs or small trees, rarely exceeding 7 m in height; bark grey. Leaves opposite, stipulate, 10-20 cm long; leaflets 3-5, elliptic, oblong or
Fig. 79: Acer thomsauli Miq.
Fig. 80: Turpinia cochinchnensis (Lour.) Merr.
ovate, 5-13 x 2-5 cm, base acute or cuneate, caudate-acuminate at apex, closely serrulate along margins, glabrous on both surfaces; lateral nerves 4-7 pairs; petiolules of lateral leaflets 4-10 mm long, of terminal leaflets 2-3 cm long. Panicles axillary or terminal, 5-18 cm long; flowers greenish-white, small, 0.2-0.3 cm across; sepals 5, ca 1 mm long, imbricately petaloid; petals 5, ca 2 mm long, imbricately ciliate. Nuts globose, 0.8-1.5 cm in diam., purplish-red, laxly lobed, fleshy, 1-3-lobed.

Fl. & Fr.: February-December.

Very common, in primary and secondary forests. Aizawl, 1100 m, Parry 619 (fide C.E.C. Fischer, i.e.); Aizawl-Lungleh road, Godfrey 435 (CAL); Sairep, K.P. Singh 96665; Pharphak, K.P. Singh 96799; Phongphui, K.P. Singh 96828; Pheileng, K.P. Singh 97070; Lungchhuang, D.K. Singh 97164.


Small-medium trees, up to 18 m tall; crown oval; bark brown, fairly smooth on young branches. Leaves opposite, imparipinnate, 20-50 cm long; leaflets 5-9, oblong-elliptic or ovate, 7-20 x 5.5-8 cm, base rounded or obtuse, cuneate, acuminate at apex, serrate along margins, glabrous on both surfaces, glossy green above, pale beneath; lateral nerves 6-8 pairs; petiolules of lateral leaflets 4-10 mm long, of terminal leaflets 2.5-4 cm long. Panicles terminal, subterminal or axillary, up to 30 cm long; flowers yellowish-white, ca 0.5 cm across, minutely bracteolate; sepals 5, ovate or elliptic-oblong, ca 2 mm long, deciduous, ciliate; petals 5, oblong-ob lanceolate, ciliate at margins. Nuts globose, 1.6-4 cm across, obscurely 2-3-grooved, fleshy; seeds brown, shining.

Fl. & Fr.: February-December.

Lungleh, 1100 m, Gage 255 (CAL); Nunswari, Tablabagh, Tlabury, K.P. Singh 94277.
SABIACEAE

(D.K. Singh)

1a. Trees; sepals and petals unequal; only 2 stamens fertile

1b. Scandent shrubs; sepals and petals equal; all stamens fertile

1. MELIOSMA Blume

1a. Leaves simple, ± glabrous; ovary glabrous

1b. Leaves compound:

2a. Leaflets glabrous with domatia in the axils of nerves beneath; ovary pubescent

2b. Leaflets glabrous without domatia; ovary glabrous


Fig. 81.

Evergreen tree, up to 18 m tall; branchlets terete to ± angular, covered with white, oblong lenticels, sparsely puberulous to glabrous. Leaves simple, alternate, oblong or oblanceolate to obovate-lanceolate, 8-18 x 2-5.5 cm, base acute or attenuate, acuminate to subacute at apex, denticly serrate toothed along margins or entire towards base, coriaceous, shining above, glabrous, sometimes with feeble domatia in the axils of the nerves beneath; lateral nerves 8-14 pairs; petioles swollen at base, 1-2 cm long. Panicles 10-16 cm long, terminal, branched, ± densely rusty puberulous; flowers ± sessile or short pedicelled, crowded, small, ca 2 mm across, white; sepals 4, unequal, ca 1 mm long, glabrous; margins ciliolate; petals 5, 1 outer glabrous, orbicular, inner petals oblong to lanceolate, 1-2 mm long; ovary glabrous. Drupes ± obvoid, 4-7 mm across, scarlet when ripe, 1-celled, 1-seeded; pericarp tisesty.

Fl. & Fr.: May to January.

Sparsely distributed in the subtropical to subtemperate forests. Phongphui, K.P. Singh 96819.
Fig. 81: Melosma henryi Diels ssp. mannii (Lace) Bens.

Small to medium sized trees, up to 20 m tall; branchlets terete to slightly canaliculate. Leaves pinnate, 20-45 cm long; leaflets 3-7 pairs, opposite to subopposite, ovate to ovate-oblong or elliptic to oblong or lanceolate, linear-lanceolate, 7-22 x 2-8 cm, base acute to rounded or truncate, acuminate at apex, entire or distantly cuspidate-serrate along margins, charnaceous, usually ± pubescent, rarely glabrous, often with domatia in the axils of the nerves beneath; lateral nerves 7-10 pairs; petiolules 5-12 mm long. Panicle erect, spreading, ca 30 cm long, much branched, rusty pubescent; flowers minute, creamy white, ca 2 mm across, sessile to subsessile; sepals unequal, glabrous, margins ciliolate; petals glabrous, inner petals sometimes a bit ciliolate at the tips of lobes; ovary densely pubescent. Drupes globose, 3-5 mm across, without sunken ventral pore.

**Fl. & Fr.**: May-September.

Sources, in tropical and subtropical evergreen forests. Sherker, Lorain (fide C.E.C. Fischer, i.e.).

**Uses**: Fruits edible.


Small to medium trees, up to 15 m tall. Leaves 6-10-jugate; leaflets lanceolate to oblong, upper leaflets ± obovate-lanceolate, 5.5-13 x 1.5-2.5 cm, base acute, acuminate at apex, serrate and dentate along margins, coriaceous, glabrous, without domatia; lateral nerves ca 15 pairs; petiolules absent or 1-2 mm long. Panicles erect, terminal, 20-25 cm long with
spreading branches, flowers white, minute; sepals ovate, ciliate, glabrous; petals glabrous, ovary glabrous. Fruits glabrous, 3-4 mm across.

*Fl. & Fr.*: April to September.

Scarcely distributed in tropical hill forests. Lushal hills, *s.n.*. *Prazer* 1890 (CAL).

2. *SABIA* Colebr.

1a. Lofty climbers; nerves oblique, incurved

1b. Climbing shrubs; nerves horizontal:

2a. Leaves large, up to 16 x 5.5 cm, glaucous beneath; panicles coriaceous

2b. Leaves smaller, up to 10 x 4.5 cm, pale-pinkish beneath; panicles racemiform


Evergreen, scandent shrubs; bark dark brown-black, more or less smooth. Leaves bifarinate, oblong-lanceolate, ovate-lanceolate or elliptic-lanceolate, 7-16 x 2-5.5 cm, acute or rounded at base, caudate, acuminate at apex, glabrous on both surfaces; lateral nerves 12 pairs; petioles 5-15 mm long. Panicles 4-7 cm long, terminal and axillary, occasionallly supra-axillary, with corymbose arranged peduncled cymes; flowers 4-5 mm across, greenish-white, aromatic; sepals broadly ovate, ca 1 mm long; petals ovate-lanceolate, 3-5 mm long. Fruits of 2 druplets, subovoid, 1-2 cm long, blue when ripe; seeds reniform

*Fl. & Fr.*: September-April.

Scarcely distributed in primary forests. Sairang, 670 m, *Deb* 30627; upper Thenzawl, *K.P. Singh* 93934.

Lofty climbers, up to 10 m tall; bark blackish, smooth. Leaves oblong or ovate-lanceolate, 7-15 x 2-4 cm, base rounded or subacute, acute or acuminate at apex, entire along margins, thinly coriaceous, dark green above, pale-pinkish below, glabrous to sparsely pubescent. Panicles axillary-supra-axillary, racemiform, reddish, 7-13 cm long, glabrous, many-flowered; flowers minute, ca 2 mm long; sepals with ciliolate margin, broadly ovate; petals elliptic, 1-2.5 mm long. Fruits with 1-2 drupelets, globose, 10-15 mm across, red when ripe.

*Fl. & Fr.*: November-May.


Evergreen, scandent shrubs; young branches thinly pubescent. Leaves ovate-oblong or ovate-lanceolate, 5-10 x 1.5-4.5 cm, base rounded, acuminate at apex, coriaceous, wavy along margins, glabrous, pale beneath; *lateral nerves* 8-10 pairs; *petioles* 5-10 mm long. Panicles with dichotomous cymes, 7-12-flowered; flowers minute, greenish-yellow; sepals ciliate, ovate, ca 1.5 x 1 mm; petals oblong 2-3 x 1 mm. Fruits with 1-2 drupelets, obovoid, oblong or subglobose, 0.5-1 cm across.

*Fl. & Fr.*: December-August.

Tuipang, 1250 m, *Parry* 475 (*fide* C.E.C. Fischer, *l.c.*).

**ANACARDIACEAE**

(K.P. Singh)

1a. Leaves simple:

2a. Drupes on a fleshy hypocarp.
3a. Stamens 8-10; carpel solitary ... 1. Anacardium
3b. Stamens 5; carpels 3, syncarpous ... 7. Semecarpus

2a. Drupes not on a fleshy hypocarp:

4a. Petals enlarging like wing; stamens 5:
drupes sessile ... 9. Swintonia
4b. Petals remain unchanged; stamens variable;
drupes pedicelled:

5a. Ovary inferior; fertile stamens 4-5 ... 4. Drimycarpus
5b. Ovary superior; fertile stamens 1 or 10:

6a. Fertile stamens 1 only; carpel 1-celled;
drupes large, fleshy with fibrous stone ... 5. Mangifer
6b. Fertile stamens 8, carpels 3-6 (one only perfect);
drupes small with bony stone ... 2. Buchanania

1b. Leaves imparipinnate:

7a. Stamens 5; carpels 3 ... 6. Rhus
7b. Stamens 10; carpels usually 5:

8a. Flowers unisexual; disc 10-lobed ... 3. Choerospondias
8b. Flowers bisexual; disc 5-lobed ... 8. Spondias

1. ANACARDIUM L.


Small or middle sized trees, 4-10 m tall with oval crown. Leaves crowded at the ends of branchlets, alternate, obovate to oblanceolate, 4-18 x 2-9 cm, base acute to cuneate, obtuse or rounded at apex, entire, coriaceous, glabrous; lateral nerves ca 10 pairs; petioles 5-18 mm long. Panicles terminal or upper axillary, 10-15 cm long, flowers 1-2 cm across, white or yellow with red streaks; calyx lobes 5, ovate-lanceolate, caduceous; petals 5, linear-lanceolate, reflexed, imbricate, ca 12 x 2 mm; stamens 8-10; ovary obovoid, unilocular; stigma minute. Drupes 2-3 cm across, reniform, indischiscent, greyish, hard, attached to a fleshy, swollen, obconic, yellow to red receptacle or hypocarp.
Fl. & Fr: March-August.

It is usually cultivated near villages for edible cotyledons; also seen in wild. Bunglang-Aizawl, Deb 31469; Lungleh, Dutta 33391.

2. BUCHANANIA Spreng.


Small evergreen trees, up to 10 m tall, all parts glabrous. Leaves obovate or oblanceolate or elliptic-oblong 10-15 x 4-6 cm, base narrowed, abruptly acuminate at apex, glabrous, glossy; petioles absent, rarely up to 1 cm long. Panicles axillary, branched, slender, exceeding the leaves, 15-18 cm long, lax flowered; flowers 2-3 mm across, white; sepals small, orbicular, pubescent; petals erect, oblong, glabrous, ca 2 x 1 mm; stamens 8. Drupes obliquely orbicular, 6-8 mm across, compressed.

Fl. & Fr: July-August.

In forests along river banks. s.loc. 750-810 m, Wenger 301, 341 (fide C.E.C. Fischer, t.e).

3. CHOEROSPONDIA S Burt.


Large trees, 20-30 m tall. Leaves up to 30 cm long; petioles slender, 5-9 cm long; leaflets 3-7 pairs, shortly petiolulate, ovate-lanceolate, 7-10 x 2.5 cm, obliquely rounded at base, apex acuminate, serrate along margins, petiolules up to 5 mm long. Panicles up to 15 cm long; flowers solitary, ca 6 mm across; sepals acute; petals elliptic, ca 2 mm long, subacute; stamens 10; disc annular, 10-lobed; ovary 5-celled; styles 5, short, erect; stigma capitate. Drupes oblong, up to 3.5 cm long, yellow when ripe.

Fl. & Fr: February-December
Dampui, 900 m. *M. Savantiana* 107463.

*Uses*: Fruits edible, wood used in construction.

4. **DRIMYCARPUS** Hook. f.


Large, evergreen trees, up to 25 m tall. Leaves lanceolate or oblanceolate, 10-16 x 3-4.5 cm, base cuneate, acuminate at apex, coriaceous, wavy at margins, glabrous, shining above, glaucous beneath; lateral nerves 16-24 pairs; petioles 1-1.5 cm long. Panicles fascicled, axillary, pubescent, shorter than leaves; flowers unisexual, 1-2 mm across, white; male sessile, female on slender puberulous pedicels; calyx 5-lobed, oblanceolate, imbricate; petals 5, ovate, imbricate; stamens 5; ovary inferior, 1-celled. Drupes transversely ovoid-oblong, 1.5-2.5 cm in diam., red when ripe, 1-seeded.

*Fl. & Fr.*: September-April.

Scarcely, in tropical evergreen forests. Changsil hill, *Praser*, April 1890, s.n. (CAL); North Vantaipha, *Deb* 31141 (CAL); Lawngtalai, *Deb* 33755 (CAL); Sabaul, *K. Singh* 99049.

5. **MANGIFERA** L.

1a. Panicles and calyx glabrous; flowers pedicellate; disc cup-shaped; drupes acuminate with protruded tip


1b. Panicles and calyx puberulous; flowers sessile or sub-sessile; disc 4-8-lobed; drupes acute or obtuse at tip


Large trees, up to 45 m tall with an oval crown. Leaves crowded at the end of branches, oblong lanceolate or lanceolate elliptic, 8-30 x 3-8...
Fig. 82: Drimycarpus racemosus (Roxb.) Hook. f.
cm, base cuneate, acuminate at apex, undulate along margins, glabrous, coriaceous, dark green, pinkish when young; pedioles up to 5 cm long. Panicles over 25 cm long, branched, terminal, pubescent; flowers ca. 3.5 mm across, greenish or reddish-yellow, pentamorous; calyx lobes 5, ovate, puberulous; petals 5, oblong-obovate, ca. 3 x 1 mm; disc 5-lobed glabrous; stamens 5, 1 fertile, rest sterile; ovary 1-celled, 1-ovulate. Drupes ovoid or ovoid-oblong, 8-12 cm long, with a blunt tip, compressed, fleshy, usually orange-yellow and sweet when ripe, 1-seeded.

**Fl. & Fr.: February-July.**

Cultivated in the gardens, *Wenger* s.loc. 351. (fide C.E.C. Fischer, l.c.); Saitaul, *M. Sawmillana* 95531.


Evergreen trees, 20-36 m tall with a dense globose crown. Leaves oblong-lanceolate to elliptic-lanceolate, 6-25 x 1.5-3.5 cm, base acute, acute at apex, entire along margins, shining green above, pale beneath; pedioles 2-6.5 cm long. Panicles 5-25 cm long, glabrous; flowers 4-5 mm across, pinkish-white; calyx 5-lobed, glabrous, small; petals 5, linear-lanceolate, ca. 4 x 0.8 mm; disc annular with 5-ridges, grooved, villous; fertile stamens solitary; ovary obliquely oval. Drupes ovate, 8-10 x 2-3 cm, obliquely acuminate, often hooked; much compressed, fleshy, yellow when ripe, non fibrous, bitter in taste.

**Fl. & Fr.: September-June.**

600-1200 m, *Wenger* s.loc. 352, (fide C.E.C. Fischer, l.c.); Mizo hills. *Dutta* 33995 (CAL).

6. **RHUS L.**

1a. Leaflets glabrous beneath; margins entire; panicles axillary, pendulous; drupes orbicular, shining yellowish-brown.

1b. Leaflets pubescent beneath; margins crenate-dentate; panicles terminal, straight; drupes subglobose.

2. *R. succedanea*

1. *R. chinensis*

Deciduous, medium sized trees, 6-12 m tall; young parts tomentose. Leaves imparipinnate, 7-13-foliolate. Leaflets sessile, elliptic to ovate or oblong-lanceolate, 4-14 x 7-8 cm, base oblique-rounded; acute or shortly acuminate at apex; crenate-dentate at margins, glabrous above except the nerves; grey tomentose beneath, coriaceous; lateral nerves 10-15 pairs. Panicles 15-30 cm long, terminal and axillary, conical; flowers 2-3 mm across, white or greenish-white, or yellowish. *Male flowers*: sepals ovate, pubescent; petals oblong, ciliate. *Female flowers*: ovary globose, pubescent. Drupes subglobose, 4-5 mm across, compressed, greenish-white, pinkish when ripe, young pubescent.

*Fl. & Fr.*: July-October.


*Uses*: Fruits edible.


Fig. 83.

Deciduous, medium sized trees, up to 20 m tall. Leaves crowded at the end of branchlets, 7-13-foliolate; common petiole 8-25 cm long; leaflets elliptic-oblong or oblong or ovate-lanceolate, 4.5-11 x 1.5-4 cm, base rounded or oblique, acuminate at apex, entire or recurved at margins, glabrous, thinly coriaceous, pinkish brown when young; lateral nerves 12-25 pairs; petiolules 3-8 mm long. Panicles 10-20 cm long, axillary with slender and drooping branches, glabrous; flowers 1.5-2 mm across,
Fig. 83: Rhus succedanea L.
greenish-yellow. Male flowers: sepals ovate-obtuse; petals oblong; disc 5-lobed. Female flowers: ovary conical; stigma globose. Drupes obliquely orbicular, 5-8 mm across, compressed, shining, glabrous, yellowish-brown.

Fl. & Fr.: March-August.

Moderately common in dense forests. Tenchiem, Neidown, Leslie 198 (CAL); North-Vanlaiphei, D.K. Singh 93079; Denlang, K.P. Singh 94109; New Champhai, K.P. Singh 94584.

7. SEMECARPUS L. f.


Medium sized, deciduous trees, 10-14 m tall; young parts, petiolar and panicle clothed with pale brown pubescence; bark dark brown to blackish-grey, exuding an acrid milky juice. Leaves simple, alternate, crowded at extremities of branches, elliptic-oblong or obovate-oblong, 10-30 x 5-16 cm, base cuneate or rounded, entire along the margins, rounded at apex, cariaceous, ± glabrous above, minutely pubescent beneath; lateral nerves (16) 17 18 (20) pairs, stout, raised; petioles 2.5-3.5 cm long, rounded. Panicle terminal, usually shorter than the leaves or rarely equalling, stout, tomentose, 5-15(28) cm long. Flowers in fascicles on the branches of the panicle. Male flowers: ca 2 mm in diam., sessile; calyx obconic, pubescent outside; petals ca 2 x 1 mm, greenish white; stamens ca 2 mm long; filaments subulate; disc. 1 mm in diam. Female flowers ca 3 mm in diam.; ovary ca 1.5 in diam.; styles densely hairy. Drupes obliquely ovoid, 1.5-2.5 x 1.5-1.8 cm, glabrous, shining black; hypocarp fleshy, orange-red, 1-2 x 1-1.5 cm, pubescent.

Fl. & Fr.: July-May.

Kolasili- Sairang road, K.P. Singh & G.P. Sinha 107526.

8. SPONDIAS L.


Medium sized, deciduous trees. 10-25 m tall with aromatic smell. Leaves 28-43 cm long, imparipinnate; leaflets opposite, usually 3-5 pairs or sometimes more, elliptic-oblong, 5-20 x 3-8 cm, base subacute, abruptly long acuminate at apex, entire along margins, shining, glabrous; lateral nerves 10-30 pairs, joined by a strong submarginal nerve; petiolules 4-6 mm long. Panicles 10-30 cm long, axillary or terminal; flowers 2-3 mm across, pale green or creamy white, bisexual, sweet scented; calyx salver shaped, 5-6-lobed, pubescent; petals 5-6 glabrous; disc 5-lobed, fleshy. Drupes oblong-ovoid, 3-5 cm long, furred, greenish-yellow when ripe, 1-5-seeded; pulp acidic, soft, aromatic; stone semiwoody, fibrous.

Fl. & Fr.: February October.

Common, in mixed forests. Puih bâsti, 900-1000 m, K.P. Singh 94455; Teirel, D.K. Singh 99195; Saiital, M. Sreemilana 99268.

9. SWINTONIA Griffith


Tress, 30-35 m tall. Leaves elliptic or elliptic-lanceolate, 11-18 x 2.5-5 cm, base acute, acuminate at apex, glabrous; petioles 2-4 cm long. Panicles 15-25 cm long, branched, glabrous; flowers bisexual, 3-4 mm across, pedicels 2-4 mm long; male flowers elongate, ca 2.5 x 1.5 mm; calyx lobes ca 1 mm long; petals ovate-oblong, ca 2 x 1 mm, puberulous on both sides; stamens 2-3 mm long; disc elongated; ovary sub conical; style simple with disciform stigma. Drupes oblong, ca 3 x 1.5 cm, glabrous, reddish in colour.

Fl. & Fr.: November-April.

In lowland hill forests. Wenger s. nnn. (fide C.E.C. Fischer, l.c).
MORINGACEAE

(K.P. Singh)

MORINGA Adans


Medium trees with soft wood; branches pubescent. Leaves up to 50 cm long; rachis thickened and articulared at base; leaflets 3–11, obovate, up to 2.4 x 1.5 cm; sparsely tomentose above, glabrous beneath; terminal larger than laterals, oblique sided at base, rounded at tip, laterals elliptic. Flowers hermaphrodite, in axillary panicles, ca 2 cm; calyx tube hairy, lobes petaloid, linear-lanceolate, reflexed across; petals white, anterior erect; anthers reflexed; stamens 5, filaments villous at base; anthers dorsifixed; ovary oblong, stipitate, 1-celled; style slender; stigma truncate, perforated; ovules many, biseriate on 3 parietal placentae. Fruit a capsule, elongate, beaked, 9-ribbed when young, 3-angled at maturity; seed many, testa corky, winged.

Fl. & Fr.: Feb.–May/June.

Commonly cultivated in the area.

CONNARACEAE

(D.K. Singh)

1a. Calyx persistent; follicles sessile
   2. Reniera

1b. Calyx deciduous; follicles stipitate
   ... 1. Connarus

1. CONNARUS L.


Large, woody climbers; bark dark brown-black, rough. Leaves imparipinnate, up to 35 cm long; rachis terete; leaflets 3–7, subulate,
Fig. 84: Connarus paniculatus Roxb.
elliptic-oblong, elliptic-ovate or elliptic-lanceolate, 7-15 x 2-5 cm, round or obtuse at base, shortly acuminate, coriaceous, glabrous; petiolules 5 mm long. Panicles 12-30 cm long, terminal, rusty tomentose; flowers white to pinkish-white, 6-7 mm long; sepals linear-oblong, ca 4 mm long, pubescent, thick and persistent; petals linear-oblong, more than twice as long as sepals, densely to sparsely pubescent or tomentose on both sides. Follicles inflated, ovoid, 2.5-4 x ca 2 cm, slightly compressed, obliquely striated outside; seeds arillate.

Fl. & Fr.: October-May.

Fairly common, in mixed evergreen forests at lower elevations. Lungleh 1000 m, Gage 27 (CAL); Tepaimukh, U. Kanjilal 4780; Hmuitang, C. K. Deka s.n. (CAL); Aizawl protected forest, 1050 m, Deb 30527; Theiriat, Deb 31288; Upper Thanzawl, K. P. Singh 93906; Kawnpi, K. P. Singh 97030.

2. ROUREA Aubl.


Large evergreen lianas or climbing shrubs; bark dark brown. Leaves unifoliate to imparipinnate, common petiole terete; leaflets 5-9, rarely up to 13, ± alternate, oblong-lanceolate or ovate-lanceolate, oblanceolate, 6-10 x 1.7-2.6 cm, rounded or obtuse at base, caudate-acuminate at apex, entire along margins, membranous to subcoriaceous, glabrous and shining on both sides; petiolules 3-4 mm long; lateral nerves 4-7 pairs. Panicles axillary or pseudo terminal, up to 10 cm long, many-flowered, glabrous; flowers white, 0.5-1 cm across; calyx lobes ovate-oblong, persistent, 2-3 mm long; petals oblong, 3-5 mm long. Fruits (follicles) obliquely ellipsoid, slightly curved, tapering to a point, 1.8-2.5 x 0.8-1.2 cm; seed solitary, oblong, 1-2 cm long, enveloped by a red aril.

Fl. & Fr.: January-June.

Scarce. Serzawl, alt 1300 m, M. Sawmliana 101750.

Uses: Fruits edible.
FLORA OF MIZORAM

FABACEAE

(K.P. Singh)

1a. Leaves 1-foliolate or 3-foliolate:

2a. Leaves 1-foliolate:

3a. Bracts and bracteoles large, opposite, concealing the flowers; petioles swollen at both ends  ... 13. Dalhemisia

3b. Bracts and bracteoles not concealing the flowers or coaduplicate; petioles otherwise:

4a. Stipules absent; pods not jointed:

5a. Keel of petal beaked distally; pods 2-many-seeded  ... 11. Crosaatara

5b. Keel of petal rounded or acute, not beaked distally; pods 1-2-seeded:

6a. Usually unbranched shrubs or undershrubs; leaves less than 1 cm wide  ... 18. Frijoyuma

6b. Usually branched shrubs; leaves more than 3 cm wide  ... 21. Flemingia

4b. Stipules present; pods jointed; segments 1-seeded:

7a. Calyx papyraceous with prominent parallel veins  ... 3. Alysicarpus

7b. Calyx herbaceous or otherwise:

8a. Pod segments folded on top of one another or coiled in a circle; pedicel hooked distally  ... 35. Uraria

8b. Pod segments in a straight line; pedicels not hooked distally  ... 18. Desmodium

2b. Leaves 3-foliolate:

9a. Leaves digitately 3-foliolate:

10a. Flowers usually pink or purplish; keeled petal unbeaked; pods 1-2-seeded  ... 21. Flemingia

10b. Flowers usually yellow (except C. hudsoniana, where it is blue); keeled petal strongly beaked; pods more than 2-seeded  ... 11. Cranaria

9b. Leaves pinnately 3-foliolate:
11a. Prostrate or erect herbs, shrubs or trees, never twining; lateral leaflets symmetrical at base:

12a. Shrubs or trees; flowers 2.5-5 cm across, red or orange:

13a. Erect shrubs; stipels subulate; flowers orange-red; pods oblong containing one distal seed

13b. Trees:

14a. Stipels knobby; flowers red; pods 2-8-seeded

14b. Stipels subulate; flowers orange; pods 1-seeded

12b. Herbs or shrubs; flowers less than 2 cm across, variously coloured:

15a. Stipels absent; pods 1-seeded

15b. Stipels present; pods 2 or more-seeded:

15a. Flowers white, pink or purple; pods not grooved between the seeds

16a. Flowers yellow or reddish-purple; pods oblong, obliquely grooved between the seeds:

17a. Seeds with a large grooved strophiole

17b. Seeds lacking strophiole

11b. Woody or herbaceous twiners; lateral leaflets usually very asymmetric at base (except Spharadia), rarely climbing or suberect (in Vigna, Rhynchosia, Spatholobus):

18a. Pedicels borne on short glandular, tumid in inflorescence axis:

19a. Flowers 1 cm long, borne in branched terminal panicles; pods distally 1-seeded and constricted at base

19b. Flowers more than 1 cm long, borne in axillary or terminal racemes; pods 2 or more-seeded:

20a. Flowers 3.0-5.5 cm long; pods 1.5-7.0 cm broad, ± terete, coraceous or woody:
20b. Flowers less than 3 cm long; pods 0.5-1.5 cm broad (except Lablab), velvets thin membranous.

23a. Keel petal curled like a circle; pods less than 0.5 cm broad, ± terete.

23b. Keel petal not curled; pods more than 0.5 cm wide, compressed:

24a. Keel hook-shaped; pods 20-30 mm wide, subulate bearing persistent style base

24b. Keel ± straight or incurved; pods narrowly obovate, 8-12 mm broad

18b. Pedicels borne on not tenuis inflorescence axis;

23a. Leaflets yellowish or reddish, gland dotted beneath (sometimes sparse in Cajanus and Rhynchosia); flowers yellow:

26a. Pods 4-11-seeded; pods not grooved between the seeds

26b. Pods 3-9-seeded; pods grooved between the seeds or 2-seeded:

27a. Pods 2-seeded; leaflets 6-13 x 4-7 cm

27b. Pods 3-6-seeded; leaflets 2-10 x 1-3 cm:

28a. Seeds atrophiolate

28b. Seeds atropinolate

25b. Leaflets not gland dotted beneath; flower colour otherwise:
29a. Standard petal reflexed with a lamelliform appendage on either side of mid line in lower half

29b. Standard petal without such appendage near the mid line in lower half:

30a. Standard petal much exceeding than other petals, placed lower most in flower

30b. Standard petal not much longer than other petal, placed upper most in flower:

31a. Flowers borne solitary on inflorescence axis; claw of wing and keeled petals longer than blade

31b. Flowers borne in clusters of 3-6 on inflorescence axis; claw of wing and keeled petal shorter than blade

1b. Leaves simply pinnate:

32a. Leaves paripinnate:

33a. Twining slender herbs; flowers pinkish

33b. Shrubs; flowers yellow

32b. Leaves imparipinnate:

34a. Herbaceous twiners:

35a. Lateral leaflets asymmetric at base; flowers in racemes; standard petal shorter than keel and uppermost in flower; style coiled

35b. Lateral leaflets symmetric at base; flowers solitary, axillary; standard petal longer than other petals and lowermost in flower; style ± straight

34b. Woody trees or erect - climbing shrubs:

36a. Leaflets alternate

36b. Leaflets opposite or rarely subopposite:

37a. Petaled winged; petals white;
pods ± fleshy, 1-seeded

37b. Petaled unwinged; petals otherwise;
pods not fleshy, 1-12-seeded:
38a. Stamens nearly free or rarely connate at base; pods distinctly distinctly moniliform

38b. Stamens monadelphous or diadelphous:

39a. Anthers apiculate; pods linear, inflated, 

39b. Anthers obtuse; pods compressed or if terete then torulose:

40a. Leaves elliptic or oblong, 1-1.5 cm broad, obliquely parallel veined; standard petal more than 1.5 cm broad; pods narrowly oblong, 7-8 mm broad

40b. Leaves elliptic, ovate, 2-7 cm broad, not parallel veined; standard petal less than 1 cm broad; pods broader:

41a. Anthers basifix; pods dehiscant, not winged, pubescent

41b. Anthers versatile; pods indehiscent, winged along one or both sutures, glabrous:

42a. Flowers in axillary racemes or panicles with the nodes often produced into short bracteoles; stamens monadelphous

42b. Racemes in simple thyrsoid panicles with the nodes not produced into bracteoles; stamens diadelphous

1. ABRUS Adans.


Twining shrub. Leaves 5-12 cm long, paripinnate; leaflets 12-24, oblong, 1.5-2.5 x 0.6-1 cm, oblong and rounded at base and apex, glabrous above, appressed pubescent beneath; stipules subulate; stipules lanceolate. Peduncles 5-12 cm long, accrescent; flowers 1.1-2 cm long, pinkish; calyx 3-4 mm long; keeled petal curved and pointed. Pods oblong, 6-10 x 0.8-1 cm, compressed, adpressed pubescent, 8-12-seeded; seeds oblong, ca 5 mm long, compressed, brown.
Fl. & Fr.: September-December.

Searce, along roadside ridges in moist place. Kowihkuth-Tuichang. K.P. Singh 94447.

2. AGANOPE Miq.


Woody climbers. Leaves 20-35 cm long, glabrous; leaflets 5-9, elliptic to oblong-lanceolate, 5-15 x 3-6 cm, base rounded or cuneate, abruptly acuminate at apex, quite entire along margins, glabrous, coriaceous; lateral nerves 5-9 pairs; petiolules 5-10 mm long. Panicles terminal, up to 40 cm long, with many racemose branches; flowers whitish. Pods flat with narrow wings on both suvures. 4-10 x 1.5-3 cm, thin, glabrous, 1-3-seeded.

Fl. & Fr.: August January.

Very common in evergreen forests. Valley near fort Lungleh, 900 m, Gage 32 (CAL); Aizawl-Taitaw, Dutta 33226; Sailep, Dutta 33547; Thaizawl, K.P. Singh 94232; Kawupui to Hattawk, D.K. Singh 93257; North Vanlaiphai D.K. Singh 93074; Zowbak, K.P. Singh 96719; Sawleng, K.P. Singh 97117.

3. ALYSICARPUS Neek ex Desv.


Fig. 85.

Erect herbs, 15-60 cm high, glabrous. Leaves 1-foliolate; leaflets elliptic or lanceolate, 3-6 x 0.4-1.5 cm, base cuneate, acute at apex, glabrous above, minutely pubescent with hairs on veins; sessile or petiolate; petiolules 3-4 mm long, bivalve lower ones; stipules lanceolate, scarious. Racemes terminal and axillary; bracts ovate; calyx papery, deeply divided,
Fig. 85: Alysicarpus glumaceus (Vahl) DC.
teeth imbricate at base, parallel veined, ciliate; petals reddish-dark violet. Pods linear, 1.5-2 x 0.2 cm, compressed, transversely constricted into 3-6 elliptic segments, rugose, minutely hairy when young, concealed within accrescent calyx; segments 1-seeded.

Fl. & Fr.: September-November.

Scarce, in open grassy lands in moist places. Habung, K.P. Singh 94264.

4. APIOS Fabr.


Twining herbs; stems slender. Leaves pinnately 3-7-foliolate; leaflets oblong, 4-10 x 2-5 cm, base cuneate, long acuminate at apex, entire, membranous, opposite, glabrous; petiolules 2-3 mm long. Flowers in long-peduncled flexuose racemes, 2-2.5 cm long, white-purplish; calyx 5-8 mm long, green; lobes unequal; corolla 1.5-2 cm long, much exerted; stamens diadelphous. Pods linear, 10-14 x 0.5-1 cm, compressed, glabrous, 12-14-seeded.

Fl. & Fr.: August-November.

Common in clearing forests. Lushai hills, 750-900 m, Weinger 210, (s.n., C.E.C. Fischer, f. r.)

5. ATYLOSIA Wight & Arn.


Climbers. Leaves 3-foliolate; petioles 3-8 cm long; leaflets ovate-triangular, lateral ones oblique, 6-14 x 5-9.3 cm, base rounded, acuminate at apex, glabrous above, adpressed pubescent beneath; petiolules up to 10 mm long. Racemes axillary, up to 3 cm long, densely flowered; flowers ca 2.5 cm long, yellow; calyx sub-bilabiate, pubescent, ca 1.5 cm long; lobes deltoid; vexillum obovate-rotund. Pods ca 4 cm long, tomentose.
Fl. & Fr.: October-February.

Sairang, 1980 m, Deb 30584

6. BUTEA Roxb. ex Willd.


Medium sized trees, up to 20 m tall; young parts softly silky; bark rough, blackish-brown. Leaves large, up to 50 cm long, 3-foliolate, common petiole 10-20 cm long; leaflets obliquely ovate, rhomboid, terminal, broadly obovate, 12-20 x 11-18 cm, cuneate or rounded at base, apex obtuse or emarginate, coriaceous, glabrescent and shining above, silky tomentose beneath; stipules tomentose; lateral nerves 4-7 pairs, arched; pedicels 5-8 mm long. Flowers in dense racemes forming terminal panicles, appearing while almost leafless, 5-7 cm long, bright orange-red, falcate; calyx densely brown, pubescent; petals silvery tomentose outside; standard 4.5 x 1.5 cm, strongly upcurved and beaked. Pods oblong, 10-15 x 3-4 cm, brownish, pubescent containing one distal seed; seeds dark-brown.

Fl. & Fr.: February-August.


7. CAJANUS DC.

1a. Erect shrubs; leaflets elliptic or oblong-lanceolate;
flowers in corymbose cymes

1. C. cajan

1b. Woody climbers; leafless ovate-rhomboid;
flowers in terminal or axillary racemes

2. C. goensis

Baker in Hook. f., Fl. Brit. India 2: 217. 1876; Kanjilal et al., Fl. Assam
2: 97. 1938.
Erect shrubs, up to 3 m tall with slender silky branchlets. Leaves 3-foliolate; petioles 1-4 cm long; leaflets narrowly elliptic or oblong-lanceolate, 3.5-8 x 1-2.5 cm, base cuneate, acute or acuminate at apex, entire, densely silky beneath; stipules minute, caducous; lateral nerves 2-3 pairs; petiolules ca 2 mm long. Flowers in loose corymbose cymes; calyx gland pubescent; teeth triangular, short; corolla yellow with red veins. Pods acuminate, 4-7 x 0.7-1 cm, torulose, obliquely grooved between the seeds, hirsute, 3-5-seeded; seeds subglobose, 6-7 mm in diam., ± compressed, brownish-reddish or blackish.

*Fl. & Fr.*: April-February.

Usually cultivated. North Vanalparai, Leslie 320 (CAL); Silalsuk, Deb 20839.

*Uses*: Seeds are used as pulses and leaves as fodder.


Woody climbers with pubescent terete branches. Leaves 3-foliolate; petioles 2-4 cm long; leaflets ovate-elliptic, 2-10 x 3-8 cm, base broadly rounded or subcordate, acuminate-cuspidate at apex, subcoriaceous, green and hirsute above, softly pubescent beneath; petiolules ca 2 mm long; stipules subulate, stipes bristle-like. Racemes terminal or axillary 7-15 cm long; bracts ovate, densely hairy; calyx greenish-grey, lanceolate; corolla yellowish, ca 1.6 cm long. Pods compressed, 4-5 x 1.2 cm, narrowly beaked, spreading, brown, hairy, 5-6-seeded.

*Fl. & Fr.*: August-February.

Thaithlao, Dutta 33929; Thenzawl, K.P. Singh 93804, 93942.

8. **CAMPYLOTROPIS** Bunge

1a. Calyx and pods glabrous

1b. Calyx and pods pubescent

... 2. *C. prainii*

... 1. *C. eriocarpa*

Branched undershrubs, up to 2 m tall; branches angular, pubescent. Leaves 3-foliolate; common petiole 1-3 cm long, adpressed pubescent; leaflets obovate, 1-2.5 x 0.5-1.5 cm, cuneate at base, mucronate at apex, subcoriaceous, glabrous and strongly veined above, grey canescent beneath; petiolules short, pubescent. Racemes axillary; peduncles 5-8 cm long; flowers 1-2 cm long, deep purple; bracts setaceous; calyx densely hairy, 4-6 mm long; teeth linear; corolla 5-8 mm long; keel incurved. Pods oblong, 10-15 mm long, apiculate, pubescent, compressed, 1-seeded.

*Fl. & Fr.*: September-January.


Erect shrubs, with puberulous-glabrescent branches. Leaves 3-foliolate, 3.5-6 cm long; petioles hairy, thin, 2.5-3.5 cm long; leaflets 1.2-2.8 x 0.5-1.4 cm, terminal leaflet larger than two laterals, obovate, round-apiculate at apex, base cuneate, glabrous above, pale, minutely hairy beneath; petiolules small, ca 1 mm long, hairy; stipules 5-6 mm long, persistent. Racemes dense, axillary; flowers 1.5-2 cm long, purple; calyx ovate, glabrous; petals subequal, glabrous. Pods ovate-oblong, 12-15 x 6-7 mm, compressed, glabrous, winged, apiculate at apex, one seeded; seeds ca 5 x 3 mm, brown, compressed, oblong.

*Fl. & Fr.*: September-October.

Scarce in the area. Champhai-Myanmar border, 900-1500 m, Deb 32035 (*CAL*).

9. **Canaivalia** DC.

Fig. 86: Campylotropis prainii (Coll. et Hemsl.) Schindler
Flora of Mizo Ram


Large perennial climbers. Leaves 3-foliolate; petioles 3-8 cm long; leaflets ovate, 10-15 (-20) x 5-12 cm, base cuneate or rounded, acuminate at apex; glabrous; lateral leaflets oblique; lateral nerves 6-7 pairs, arching; petiolules 4-6 mm long; stipules ca 5 cm long, lanceolate. Racemes 12-14 cm long, axillary on long peduncles; peduncles terete, 15-20 cm long. Flowers solitary or in pairs, white with purple tinge; calyx 15-18 mm long, 2-tipped, minutely pubescent to glabrescent outside; corolla exserted, 3-6 cm long; petals clawed and auricled at base. Pods 20-25 x 3.5-4.5 cm, oblong, flat with two longitudinal ridges along the upper suture; 6-10-seeded; seeds 25-30 mm long brown or pinkish.

Fl. & Fr.: August-December.

Recorded on the basis of C.E.C. Fischer (l.c.).

Uses: Young fruits eaten as vegetable and seeds as pulse.

10. CLITORIA L.

la. Leaves 3-foliolate; flowers in pairs, bright purple; pods 1-4-seeded

lb. Leaves 5-7-foliolate; flowers solitary, bright blue

with orange at base; pods 8-10 seeded


Scandent undershrubs. Leaves 3-foliolate; common petiole 4-7 cm long; leaflets ovate-elliptic, 4-10 x 1.5-4 cm, base rounded, shortly acuminate-mucronate at apex, glabrous above, pale pubescent beneath; lateral nerves 10-12 pairs; petiolules 2-3 mm long; stipules up to 1 cm long, ovate. Peduncles axillary, 4-5 cm long, usually 2-flowered with a pair of small ovate bracts at the base of calyx and a pair of bracteoles in each flower. Flowers 3.4-5 cm long; calyx tubular, 12-15 mm long, glabrous, membranous; petals bright purple, glabrous, 2.5-4 cm long. Pods linear, 3-4 x 0.7-0.8 cm, compressed, beaked by a persistent style, glabrous, 1-4-seeded; seeds transversely oblong, ca 6 x 3 mm, dark-brown.
Fig. 87: *Clitoria mariana* L.
Fl. & Fr.: July-October.

Tuisenhuar, 1200 m, Parry 76, (fide C.F.G. Fischer, l.c.); Kawkhukh-Hliapui, K.P. Singh 94330, 94387.


Climbing herbs. Leaves 5-7-foliolate, imparipinnate; petioles 3-6 cm long; leaflets ovate, 2.5-4.5 x 1.5-3.5 cm, base rounded, obtuse or rounded, mucronate at apex, glabrous above, minutely pubescent beneath; petiolules ca 2 mm long; stipules narrowly lanceolate, bracts ovate; bracteoles roundish, obtuse. Flowers solitary, 4.5-5.5 cm long; calyx tube 10-12 mm long with ovate teeth; petals bright blue with orange centre. Pods linear, 8-10 x 0.9-1 cm, compressed with persistent style, minutely hairy, 8-10-seeded; seeds black.

Fl. & Fr.: July-January.

Scarce; cultivated for its decorative flowers. Tablabagh, K.P. Singh 94284.

**II. CROTALARIA L.**

1a. Leaves simple:

2a. Herbs or shrubs, 20-75 (-100) cm high:

3a. Stipules absent; racemes terminal:

4a. Racemes in dense capitate heads; corolla blue-violet

...7. **C. khasiana**

4b. Racemes of lax flowers, not in heads; corolla yellow

...1. **C. albida**

3b. Stipules present; racemes usually

leaf opposed or interpetiolar:

5a. Stipules linear lanceolate, decurrent; racemes 3-5-flowered; bracteoles 5-8 mm long; calyx hairs less than 1.5 mm long

...4. **C. ferruginea**

5b. Stipules ovate-lanceolate, not decurrent; racemes 3-12-flowered; bracteoles 10-15 mm long; calyx hairs 3-4 mm long

...9. **C. mysoresensis**
2b. Tall undershrubs or shrubs, 0.75-2 m tall:

6a. Branches reticulate: leaves 10-28 cm long ... 6. C. reticulata
6b. Branches ± terete or sulcate; leaves 3-12 cm long:

7a. Pods sessile, pubescent ... 6. C. juncea
7b. Pods distinctly stalked, glabrous:

8a. Leaves elliptic-lanceolate with acute-mucronate apex; bracts linear-lanceolate, corolla not exerted ... 8. C. karacil
8b. Leaves oblanceolate-oblong with reflex apex; bracts subulate; corolla much exerted ... 11. C. retusa

1b. Leaves 3 foliolate:

9a. Leaflets obovate with obtuse-mucronate apex; racemes always terminal; pods glabrous ... 10. C. pallida
9b. Leaflets elliptic-oblong to lanceolate; racemes usually leaf opposite, rarely terminal:

10a. Pods compressed, acute at both ends ... 3. C. cyrtocarpa
10b. Pods turgid, acuminate at apex only:

11a. Pods ovoid-ellipsoid, pubescent ... 5. C. indobracteata
11b. Pods oblong, glabrous ... 2. C. anagyroides


Herbs, 25-75 cm high with numerous slender, appressed-pubescent braches. Leaves simple, linear-oblong to oblanceolate, 1-2 x 0.3-0.8 cm, base cuneate, obtuse-mucronate at apex, glabrescent above, appressed-pubescent beneath; petioles 2-3 mm long; stipules absent. Racemes terminal, hairy, up to 15 cm long, 5-15-flowered; bracts linear, hairy; flowers 0.8-1.2 cm long, yellow; calyx silky, 7-10 mm long, deeply divided into 5-teeth; standard petal suborbicular, 7-9 x ca 5 mm, sometimes purple streaked. Pods oblong, 1.5-2 x 0.5-0.6 cm, glabrous, apiculate, 5-12 seeded; seeds up to 1 mm across.

Fl. & Fr.: July-December.
On hill slopes. Champhai-Myanmar border, Deb 31046; Champhai. K.P. Singh 94534; Blue mountain, 1975 m, Mao 107121.


*Bhrami*

Shrubs, 1-4 m tall with numerous branches. Leaves 3 foliaceous; petioles 3.5-5 cm long; leaflets oblong to lanceolate, 2.5-8 x 0.7-2.5 cm, base cuneate to subacute, subacute or mucronate at apex, glabrous above, puberulous beneath, membranous; petiolules 2-4 mm long; stipules linear, setaceous, 4-6 mm long. Racemes 15-40 cm long, terminal; bracts linear, 8-12 mm long; pedicels 7-9 mm long; calyx 5-lobed, hairy, lanceolate; corolla yellow; standard petal 10-16 mm in diam., yellow with brownish-red streaks. Pods oblong, 2.5-3.5 x 0.7-1.4 cm, brown, nearly glabrous, turgid, with persistent curved style.

*Fl.* & *Fr.*: June-December.

Native of tropical America, now naturalized. Saitang, *M. Surratiuna* 95592.


*Bhrami*

Bushy shrubs, up to 5 m tall with densely appressed sericeous stems. Leaves 3-foliaceous; petioles 1-4 cm long; leaflets elliptic-oblong to lanceolate, 2.7 x 1-3 cm, base cuneate or attenuate, acute at apex, glabrous above, puberulous beneath, membranous; petiolules ca 2 mm long; lateral nerves 8-10 pairs; stipules absent or minute, subulate. Racemes 8-14 cm long, usually leaf opposed, sometimes terminal, 10-50-flowered; calyx 5-7 mm long, hairy outside; corolla 7-8 mm long, much exerted, yellow with standard and wings purplish-brown. Pods oblong-elliptic, 2.5-4 x 1-1.2 cm, scarcely inflated, acute at both ends, pubescent, 2-8-seeded; seeds ca reniform, 4 x 3 mm, brown.

*Fl.* & *Fr.*: May-January.
Fig. 38: Crotalaria anagroides Kunth
Common, in open broad-leaved forests. Champhai, Deb 30955; Thallung, Dutta 35961; K.P. Singh 96807; Leite, Dutta 34110; North Vanlaiphai, D.K. Singh 99211.


Erect or ascending herbs or subshrubs, 20-100 cm high; branches brown, pubescent. Leaves simple, elliptic to obovate-oblong, 2-5 x 0.5-2.5 cm, base rounded or cuneate, obtuse, mucronate at apex, appressed brownish, sericeous on both surfaces; stipules 4-8 mm long, ovate-lanceolate. Racemes leaf opposed. 2-10 cm long, laxly 1-5-flowered; bracts linear, 6-8 mm long; calyx ca 1 cm long, brown, silky; corolla yellow, standard broadly elliptic. Pods oblong, 1.5-2 x 0.5-0.8 cm, black when mature, glabrous, 20-30-seeded.

Fl. & Fr.: August-December.

Hill slopes, N.E. Lungleh. 1110 m, Gage 92 (CAL); from Lungleh-Champhai, Deb 31074; North-Vanlaiphai, Deb 31166; Kawlhkulh-Tuichang, K.P. Singh 94439.


Shrubs with sparsely pubescent branches. Leaves 3-foliolate, petiolules 4-6 cm long; leaflets oblong-lanceolate, 5-8 x 1.5-2.5 cm, base attenuate, acute at apex, membranous, glabrous above, puberulous beneath; petiolules 2-3 mm long; stipules minute, setaceous. Racemes leaf opposed or terminal, densely 20-30 (-50)-flowered; bracts minute, setaceous, flowers yellow; calyx 5-6 mm long, silky with lanceolate teeth; corolla 1-1.2 cm long. Pods ovoid-ellipsoid, ca 2.8 x 1 cm, turgid, finely pubescent, brown, 8-10-seeded; seeds reniform.

Fl. & Fr.: April-November

Scarce, in open places. Bualpui, K.P. Singh 93260.

Tall annual shrubs, up to 2 m with slender, ± terete, appressed pubescent branches. Leaves simple, oblong-elliptic, 4-12 x 0.4-3 cm, base cuneate, obtuse or acute at apex, ferrugineous hairy on both surfaces; petioles very short; stipules absent or minute, subulate. Racemes up to 30 cm long, mostly terminal and lateral, laxly 10-20-flowered; flowers ca 2.5 cm long, yellow; calyx divided almost to base into lanceolate teeth, brown-velvety; corolla bright yellow, exserted, glabrous. Pods oblong, ca 2.5-4 x 1 cm, brown velvety with stiff hairs; seeds 10-15, ca 4 mm across, brown.

Fl. & Fr.: December-March

Usually cultivated in the fields. Darzo, 1200 m, Parry 604, (fide C.E.C. Fischer, l.c.).

Uses: Cultivated as a fibre yielding plant and for green manure; flowers and the fruits are used as vegetables.


Low, sprawling, caespitose shrubs; stems brown, 15-40 cm long, pubescent. Leaves simple, obovate or oblanceolate, 1.3-0.4-1 cm, base cuneate, acute at apex, sessile, green and glabrate above, pubescent beneath; stipules absent. Flowers 6-20, in terminal heads or congested racemes; bracts and bracteoles linear, persistent; calyx 10-12 mm long, brown, pubescent; petals blue-violet, glabrous. Pods obovoid, 8-10 x 4-5 mm, sessile, glabrous.

Fl. & Fr.: July-January.

Phongpui, 2100 m, Parry 577 (fide C.E.C. Fischer, l.c.).

Undershubs with terete, sparsely appressed pubescent branches. Leaves simple, elliptic to elliptic-lanceolate, 4-10 x 1.5-2.5 cm, base cuneate, mucronate at apex, glabrous above, appressed pubescent beneath; lateral nerves 5-6 pairs; petioles 3-4 mm long. Racemes axillary and terminal; flowers solitary, ca. 1.5 cm long, yellow; bracts 4-5 mm long, linear, secalaceous, pubescent, calyx 5-lobed, 2-lipped, teeth linear-lanceolate, corolla not or slightly exerted. Pods stalked, oblong with a persistent beak, 1.5-2 x 0.4-0.6 cm, brown, glabrous; seeds reniform, brownish-black.

Fl. & Fr.: November-February.

Aizawl-Sakaelui, Leslie 39 (CAL); Aizawl, Deka, s.n.; Aizawl, Deb 30648.


Erect shrubs, 20-70 cm high with greyish densely tomentose branches. Leaves simple, oblong-elliptic or elliptic-ovate, 1.5-5 x 0.3-2 cm, base and apex obtuse, membranous, gland dotted, sparsely sericeous above and dense below; stipules 4-10 mm long, linear-lanceolate, sericeous. Racemes up to 25 cm long, terminal, laxly 3-12-flowered, densely brown, sericeous; bracts ovate-lanceolate, 1-2 cm long; calyx 1-1.5 cm long, clothed with silky hairs; teeth lanceolate; corolla yellow, slightly exerted. Pods terete-oblung, 2-3 x 0.6-0.7 cm, glabrous, 20-30-seeded; seeds up to 1.5 mm across.

Fl. & Fr.: July-December.

On moist slopes. Vanlaiphai, Deb 31166.


Fig. 89.
Fig. 89: Crotalaria pallida Ait.
Undershubs. 1-2 m tall with puberulous branches. Leaves 3-foliate; common petioles 2-5 cm long; leaflets obovate, 3.5-6.5 x 1.5-4 cm, base cuneate-subacute, obtuse-rounded, mucronate at apex, membranous, glabrous above, punctate, glaucous, obscurely hairy beneath, petioles ca 2 mm long. Racemes up to 30 cm long, terminal and lateral, 20-50 cm long; calyx pubescent, lobes lanceolate; corolla yellow, finally lined with reddish-purple, glabrous; keel falcate. Pods oblong, 4-5 x 0.6-0.7 cm, inflated, pubescent to glabrous; seeds many, kidney-shaped, ca 3 mm in diam., brownish.

Fl. & Fr.: October-May.

Common, in open moist places on hill slopes. Near Tithllog, K.P. Singh 93988, 96629; Phairuang, K.P. Singh 94219; Tuichang, K.P. Singh 94247; Sairang, M. Sawmliana 95591.


Erect, robust shrubs, 1-2 m tall with dense pubescent branches. Leaves simple, oblong-oblong, 3-5.5 x 1.5-2 cm, base attenuate, obtuse, apiculate, retuse at apex, glabrous above, pubescent beneath; stipules linear, subulate. Racemes up to 20 cm long, terminal; bracts subulate; flowers ca 2 cm across; calyx puberulous; lobes lanceolate; corolla bright yellow; standard petal orbicular. Pods linear-oblong, 2-4.5 x 1.5 cm, shortly stalked, glabrous, many-seeded.

Fl. & Fr.: November-April.

Koladyne River, 600 m, Parry 436 (fide C.E.C. Fischer, l.c.).


Shrubs, 1-2 m tall; stems tetragonous, sulcate, pubescent. Leaves alternate, distant, simple, linear or lanceolate, 10-28 x 1-3 cm, base rounded, gradually acuminate at apex, entire along margins, sparsely pilose
Fig. 90: Crotalaria tetragona Andr.
above, densely silky pilose beneath; stipules short ca 3 mm long. Racemes simple, 12-22 cm long, 5-10-flowered, bracts setaceous; flowers 1.5-2.8 cm long, yellow, in loose terminal or axillary racemes; calyx 1.5-3 cm long, brown-tomentose; teeth lanceolate, divided up to the base; corolla glabrous, often spotted or streaked, brownish purple outside, little exserted. Pods oblong, 3.5 x 1.5 cm, subsessile, brown, velvety; seeds 10-20, brown, ca 4 mm across.

Fl. & Fr.: September-December.

Aizawl-Champhai, Deb 30905; Khuitum, Deb 31199; Hnahthial, ca 750 m, Mao 107045.

12. DALBERGIA L. f.

1a. Leaflets less than 13:

2a. Leaflets 5-9; flowers ca 3 mm long; stamens 10, monadelphous
   3. D. ramosa

2b. Leaflets 7-13; flowers 5-7 mm long; stamens diadelphous (5+5)
   5. D. volubilis

1b. Leaflets more than 13:

3a. Trees
   1. D. lanceolaria var. assamica

3b. Scandent shrubs:

4a. Leaflets 17-25, with rounded base; stamens diadelphous (5+5); pods 2.5-3 cm broad
   4. D. stipulacea

4b. Leaflets 25-41 with oblique base; stamens 9 or 10, monadelphous; pods 1-1.3 cm broad
   2. D. pinnata


Deciduous trees, 15-25 m tall. Leaves 20-30 cm long; petioles terete; leaflets 13-21, oblong-elliptic, 3-5 x 2-3 cm, base rounded, obtuse or emarginate at apex, glabrous above, appressed pubescent beneath; lateral nerves 10-12 pairs; petioles terete; petiolules 3-5 mm long. Panicles 10-
15 cm long, axillary, pubescent; bracts and bracteoles deciduous; calyx obconic, silky outside with lowest tooth much longer; corolla 5-7 mm long, white or purplish blue, standard orbicular, purple veined with a light green central spot; stamens in two bundles of 5 each. Pods linear-oblong, elliptic, 4-7.5 x 1.5-2 cm, strap shaped, pointed at both ends, glabrous, 1-4-seeded.

*Fl. & Fr.*: March-January.

Scarcely in the area. South Vanlaiphai, *Dutta* 34027.


Scandent bushy shrubs, 2-12 m tall; young parts ± pubescent. Leaves 8-18 cm long; common petiole terete; leaflets 25-41, oblong, 1.5-2.5 x 0.5-0.8 cm, base oblique, rounded-emarginate at apex, entire along margins, glabrescent above, slightly pubescent beneath; petiolules very short; stipules lanceolate. Panicles 3-5 cm long, sessile, mostly axillary with corymbose, pubescent, dense branches; flowers 0.5-0.8 cm long, greenish white; bracts ovate or suborbicular; calyx pubescent; corolla 6-7 mm long, white; stamens 9 or 10, united in a single slit sheath. Pods oblong, 4-7 x 1-1.3 cm, glabrous, very flat, red-brown, blunt or little acute, stipitate, 1-3-seeded.

*Fl. & Fr.*: February-October.

Recorded on the basis of C.E.C. Fischer (*l.c.*).


Straggling or climbing shrubs or small trees, up to 8 m tall; branchlets often modified into tendrils. Leaves 12-25 cm long; petioles 5-10 cm long; leaflets 5-9, elliptic, oblong or obovate, 4-10 x 2-5 cm, base subacute or rounded, acute to obtuse, often emarginate at apex, recurved along
Margins; lateral nerves 10-15 pairs, prominent beneath; petiolules 2-3 mm long. Panicles terminal or axillary, 10-20 cm long; pedicels 1-2 mm. Flowers very small, ca 0.3 cm long, white, sweet scented; calyx pubescent, teeth subequal, ciliate; corolla dull-white; stamens 10, in one bundle. Pods elliptic, 5-10 x 2-2.5 cm, cuneate at base, sub acute at apex, 1-2-seeded.

Fl. & Fr.: April November.

Champhai, Deb 30911; Lungleh, Dutta 33403.


Scandent shrubs or sprawling trees, up to 10 m tall; young shoots puberulous. Leaves 12-20 cm long; leaflets 17-25, alternate, oblong, 2-3.5 x 0.8-1.3 cm, base rounded or cuneate, obtuse at apex, entire along margins, glabrous above, sparsely hairy beneath in young stages; petiolules 1-3 mm long; stipules oblong, deciduous. Panicles axillary, 8-12 cm long with ascending racemose branches; bracts oblong-lanceolate, 4-8 cm long. Flowers reddish-purple, calyx 5-toothed, lower tooth linear and longer than others, glabrous; corolla reddish purple, 5-7 mm long; stamens in two whorls of 5 each. Pods oblong-elliptic, 5-10 x 2.5-3 cm, flat, subacute at base, obtuse at apex, ripening to deep brown, 1-seeded, thickened and rugose over the seed; seeds flat, 15-25 mm across, brown.

Fl. & Fr.: March-November.

Very common, in tropical forests in open and moist places. Kolasib, B. Godfrey 563 (CAL); Silsuk, Deb 30860; Champhai, Deb 30900; Dutta 33832; Mampui-Ngengpui, K.P. Singh 92898; Kamthangpui, K.P. Singh 93230; Thenzawl, K.P. Singh 93864; Kawlhkulh-Tuichang, K.P. Singh 94427; Kaitang, M. Sawmiiana 95562; Sherchhip, K.P. Singh 96608; Zawoak, K.P. Singh 96124; Darlawn, K.P. Singh 97111; Sawveleng, K.P. Singh 97718; Lungleh, D.K. Singh 99210.

Fig. 91: Dalbergia stipulacea Roxb.
Large woody climbing shrubs; branches twisted into spiral hooks. Leaves 10-17 cm long; leaflets 7-13, oblong or obovate-oblong; 3-5 x 1.8-2.5 cm, base cuneate, obtuse, truncate or emarginate at apex, glabrous; lateral nerves numerous; petiolules 2-3 mm long. Panicles 20-30 cm long, terminal and axillary, copious, rusty pubescent with corymbose branches. Flowers 0.5-0.7 cm long, light mauve, bracteate and bracteolate; calyx teeth minute, velvety; corolla pale blue; standard broad; stamens 10, united into 2 sheaths. Pods oblong-elliptic, stalked, 4.0-7.5 x 1.5-2.5 cm, greenish-yellow, glabrous, veined, 1-2-seeded.

Fl. & Fr.: December-June.

Lungleh, 900 m, Gage 196 (CAL).

13. DALHOUSIEA Wallich ex Benth.


Evergreen, woody climbing shrubs; young shoots hairy. Leaves 1-foliolate, simple, ovate to suborbicular or obovate-orbicular, 4-20 x 6-14.5 cm, base rounded or subcordate, shortly mucronate at apex, glabrous on both surfaces; lateral nerves 7-10 pairs; petioles 1.5-5 cm long, swollen at both ends. Flowers in axillary corymbs; peduncles solitary or once or twice bifid; bracts in pairs, like stipules, at the joints of peduncles, rounded, persistent, 0.5-1 cm long; bracteoles larger, up to 3.5 cm long, concealing flowers; flowers 6-8 mm long; calyx hairy outside; corolla white; stamens free, glabrous. Pods turgid, 6-8 x 3-3.5 cm, compressed, tapering at both ends, 1-3-seeded; seeds 2-2.5 cm across, compressed, brown.

Fl. & Fr.: May-January.

Scarce, in evergreen forests. Aizawl, Godfrey 548 (CAL); Kolasib, K.P. Singh 93140.
14. DERRIS Lour.

1a. Erect trees; pods winged on dorsal suture only ... S. D. robusta

1b. Woody climbers; pods winged on dorsal and ventral sutures:

2a. Nodes of the inflorescence produced into distinct peduncles; pods unknown ... 1. D. lushaiensis

2b. Nodes of the inflorescence not produced into distinct peduncles; pods known and distinctly winged ... 2. D. monticana


Climbing shrubs. Leaves 25-33 cm long; leaflets 11-13, oblong-cuneate, 9-12 x 2.5-3.8 cm, glaucous below; petiolules 5-6 mm long; stipules ovate. Racemes axillary; nodes produced into peduncles. Flowers 1.5-1.6 cm long; calyx puberulous to pubescent, campanulate, 4-toothed; vexillum obovate-oblong, eciliate; wings and keels narrowly oblong; pistil 1-1.5 cm long; ovary hairy; ovules 2-4. Pods not known.

Fl.: March.

South Lushai Hills, Valley near Fort Lunglei, 300-600 m, Caste 23 A-C (CAL: Holotype). Endemic.


Climbers; stems rusty tomentose. Leaves 20-27 cm long; leaflets 7-11, oblong, oblanceolate, 6-9 x 2-3 cm, base narrowed or slightly rounded-cuneate, shortly acuminate at apex, glabrous; lateral nerves 6-8 pairs; petiolules 3-4 mm long, puberulous. Racemes axillary, up to 14 cm long; flowers blue or purple, crowded at nodes; bracts ovate, caducous; calyx narrowly campanulate, deltoid with 5 teeth; vexillum 1.2-1.4 cm long; keels auricled near the claw; ovary pubescent. Pods oblong, winged on both the sutures, 2-3-seeded.

Fl. & Fr.: March-September.
Scarse in the area. Lungdhek, 900 m, Guge 23 (CAL).


Medium, erect trees, 4-20 m tall. Leaves 10-20 cm long; petioles slender; leaflets up to 20, elliptic-oblong, 3-6 x 1.5-2.5 cm, base narrowed and unequal, mucronulate at apex, minutely puberulous on both surfaces; petiolules 2-3 mm long. Racemes axillary, 10-25 cm long; flowers 0.8-1.2 cm long, white, fascicled; calyx golden hairy, campanulate; corolla white; vexillum ovate-orbicular, erect with a faint yellow blotch; pistil 7-8 mm long; ovary silky, pubescent. Pods strap-shaped, 3-8 x 0.5-1 cm, glabrous, reticulately veined, narrowed at both ends, winged along the upper suture, 1-5-seeded; seeds orbicular, ± 2.5 mm, brown-black, compressed.

*Fl.* & *Fr.*: April-October.

Very common, in tropical forests in open places. Hnathial, K.P. Singh 93984; Tilthlang, K.P. Singh 94085; Tlabung, K.P. Singh 94262; Puiibasti road, K.P. Singh 94459.

15. **Desmodium** Desvayaux

1a. Leaves 1-foliolate:

2a. Petioles winged

2b. Petioles not winged:

3a. Pods indented only along lower suture

3b. Pods indented along both sutures:

4a. Leaves broadly ovate, densely hispid above; calyx teeth narrower-longer; pods 3-6-jointed, densely pubescent with hooked hairs

4b. Leaves narrowly ovate, glabrous above; calyx teeth deltoid; pods 6-10-jointed, ± glabrous
1b. Leaves 3-foliolate:

5a. Inflorescence racemiform; flowers concealed by a pair of leafy bractlilier, persistent bracts
       ...11. D. pulchellum

5b. Inflorescence umbellate, corymbose, racemose or paniculate; flowers not concealed by leafy bracts; bracts caducous:

6a. Stem triquetrous, flowers umbellicord:

7a. Bracteoles elliptic-oblone;
    peduncles 1-4 cm long
    ...1. D. cephalosoides

7b. Bracteoles linear; peduncles
    less than 1 cm long
    ...14. D. triangulare

6b. Stem usually terete; flowers
    racemose or panicked:

8a. Plants prostrate; leaflets
    less than 15 mm long:

9a. Leaflets obovate; pods undulate
    only along lower suture
    ...15. D. triflorum

9b. Leaflets oblong-ovate or suborbicular;
    pods undulate along both sutures
    ...7. D. microphyllum

8b. Plants erect or suberect;
    leaflets more than 15 mm long:

10a. Pods indented along lower suture only:

11a. Lateral leaflets much reduced or wanting;
   keel petal with short lateral appendages:

12a. Terminal leaflets linear-lanceolate to elliptic-ovate;
   pods short hooked-hairy
   ...8. D. motorium

12b. Terminal leaflets elliptic-ovate;
   pods long hooked-hairy
   ...4. D. gyroides

11b. Lateral leaflets not much reduced though	hen often smaller than terminal leaflets;
   keel petal unappendaged:

13a. Stamens monadelphous; pods 1-3-jointed;
   joints crescent shaped
   ...12. D. repandum

13b. Stamens diadelphous; pods 3-7-jointed;
   joints not crescent shaped:
14a. Pods pubescent with long hooked
hairs at sutures only; indentations
between pod joints shallow

14b. Pods pubescent all through with
minute hooked hairs; indentations
between pod joints deep

10b. Pods indented along both sutures:

15a. Leaflets sinuate

15b. Leaflets not sinuate:

16a. Inflorescence 15-40 cm long, laxflowered;
segments of pod longer than broad

16b. Inflorescence 8-15 cm long, dense flowered;
segments of pod ± isodiametric

1. Desmodium cephalotoides Craib in Kew Bull. 1912: 150. 1912;

Perennial, erect herba or undershrubs with triquetrous branches,
densely villous-pubescent. Leaves 3-foliolate; leaflets elliptic-ovate to
lanceolate-oblong, 4-12 x 2-5 cm, base cuneate or acute or subrotundate,
acuminate or subacute mucronate at apex, entire along margins,
chartaceous, glabrous at maturity on both surfaces except nerves; petiolules
up to 3 mm long; stipules dry, brown, caducous. Inflorescence axillary,
solitary, peduncled in silky-villous umbels; peduncles 3-4 cm long; flowers
1.2-1.3 cm long, whitish; bracts dry, brown, ovate or oblong; bracteoles
elliptic-oblong; calyx campanulate, glabrous within; lower middle lobe
longest-acuminate; corolla white; stamens monadelphous. Pods 3-5-jointed,
1-1.5 cm long, silky-pubescent.

Fl. & Fr.: June-October.

Aizawl, Godfrey 509 (CAL); s.loc. Parry 16 (CAL); Thalhlang to
South Vanlaihpei, Dutta 34021; Thalhlang, Dutta 33961; Leite, Dutta
34110; Pheileng, K.P. Singh 97094; Keilang, M. Sawmliana 95529.
101733.

Baker in Hook. f., Fl. Brit. India 2: 170. 1876; Kanjilal et al., Fl. Assam
Shrubs, up to 1.5 m high with slender terete, drooping branches. Leaves 3-foliate, sulcate, covered with spreading hairs; leaflets elliptic or narrowly obovate, 2-8 x 1-4 cm, base rounded, obtuse or subacute at apex, glabrate above, appressed pubescent beneath; petiolules 5-8 mm long; stipels linear; stipules 10-18 x 2-4 mm, lanceolate; lateral nerves 5-10 pairs, prominent beneath. Racemes elongate, axillary or terminal; bracts ovate-lanceolate, densely silky; calyx 2.5 mm long, campanulate; petals purple or lilac, standard broadly ovate, 4-6 mm broad. Pods 3-4 x 2-3 mm, straight along the upper suture, indented along lower suture; joints 4-6, minutely pubescent with hooked hairs.

Fl. & Fr.: September-December.

In open forests on sunny hill side. Lushai hills, 1500 m, Wenger 360, (fide C.E.C. Fischer, l.c.).


Suberect shrubs, 1-3 m tall; stems angular; branches clothed with appressed white hairs. Leaves 1-foliate, herbaceous; leaflet narrowly ovate or elliptic, 5-15 x 3-5 cm, base rounded, acute or acuminate at apex, truncate, glabrous above, puberulous beneath; lateral nerves 8-10 pairs; petiolules 1-2.5 cm long. Racemes 15-30 cm long, axillary and terminal; rachis and pedicels puberulous; bracts subulate, 3-5 mm long; calyx small, narrower, ca 0.3 mm, corolla purplish-white. Pods falcate, 1-2.5 x 0.2 cm, deeply indented on lower suture; joints 4-8, clothed with minute hooked hairs.

Fl. & Fr.: August-December,

Valley Jungle, fort Lunglei, 900-1050 m, Gage 224 (CAL).


Fig. 92,
Fig. 92: Desmodium gyroides (Roeb. ex Link) DC.
Shrubs, 1-2.5 m tall. Leaves 3-foliate but sometimes 1-foliate by suppression, petioles 1.5-3 cm long, terminal leaflets broadly elliptic or obovate, 3.6 x 2.4 cm, base broadly ovate, obtuse or mucronate at apex; lateral nerves 5-7 pairs; lateral leaflets none or when present elliptic, 1-2 x 0.7-1 cm, leaflets thinly pubescent above with minute adpressed hairs, glaucous and densely adpressed hairy beneath; petiolules very short. Racemes 4-16 cm long, terminal or axillary; peduncles whitish pubescent; bracts ovate, 3-5 mm long; flowers 5-7 mm long; corolla pale pink to purple-pink; pods linear, 2-4 x 0.3-0.5 cm, curved, indented along lower suture, densely long hairy; joints 3-10; seeds black, reniform.

Fl. & Fr.: September-February.

Common, in subtropical forests along the roadside in open places. Aizawl-Sonai, Leslie 27 (CAL); Kawhlukul-Tuichang, K.P. Singh 94409, 94440, Saithal, D.K. Singh 98847; Huathal, 750 m, May 107042.


Ascending herbs or undershrubs, up to 1.5 m tall; branches grey tomentose. Leaves usually 3-foliate; petioles 1-4 cm long; leaflets elliptic-oblong or obovate, 3-7 x 1-3 cm, base rounded, rounded and notched at apex, glabrous above, appressed greyish pubescent beneath; lateral nerves 7-9 pairs; petiolules small; stipules ± 10 mm long, lanceolate. Racemes 5-10 cm long, axillary or terminal, elongate, dense; bracts ovate, 7-8 x 3-4 mm, striate, ciliate, acuminate; flowers 5-8 mm long, purplish-pink; calyx glabrous, pods 1.5-3 x 0.2-0.3 cm, indented along the lower suture, upper suture ± straight, pubescent with hooked hairs along the sutures; joints 3-7, reticulate; dehiscing by lower suture.

Fl. & Fr.: June-November.

Common, in open places along the road side. Runglang, Deb 91434; Thenzaw-Buangpui, K.P. Singh; Kawhlukul-Hliapui, K.P. Singh 94323; Zote, K.P. Singh 94567.


**Fig. 93.**

Undershrubs, up to 2 m tall. Leaves 3-foliolate or sometimes 1-foliolate; petioles 2-5 cm long; leaflets ovate-elliptic, 4-15 x 1.5-7.5 cm, terminal larger, lateral ones smaller, base cuneate or rounded, acute or acuminate at apex, puberulous above, appressed densely pubescent beneath, ciliate along the nerves; petiolules ca 2 mm long; stipules triangular, 10-15 x 2-3 mm. Racemes 15-40 cm long, axillary and terminal, lax flowered; flowers fascicled; bracts minute, lanceolate; calyx villous; corolla purplish-pink, 3-7 mm long; standard white with a violet blotch, 3-4 mm wide. Pods falcate, 3-6 x 0.2-0.7 cm, indented along both sutures, densely pubescent with minute hooked hairs; joints 8-10, strongly nerved.

_Fl. & Fr._ July-November.

Thenzawl, K.P. Singh 93857, 93951; Kawikhul-Tuichang, K.P. Singh 94403; Pullobasti road, 600-1000 m, K.P. Singh 94481; Saithah, D.K. Singh 92916; Keiting, M. Sawmiathan 99253.


Prostrate, much branched herbs; branches hairy. Leaves 3-foliolate or sometimes 1-foliolate; leaflets oblong or suborbicular, 2-6(-15) x 1.6(-10) mm, base rounded or cordate, obtuse or emarginate at apex, glabrous above, sparsely and weakly hairy beneath; stipels minute; stipules ovate, 3-8 x 0.5-1 mm. Racemes few, 1.5-5 cm long, terminal and lateral; calyx 3-3.5 mm long with lanceolate teeth, brown, pilose; corolla 4-5 mm long, purplish-pink, fading to white. Pods oblong, 5-13(-18) x 2-3 mm, undulate along both sutures, dehiscing along lower suture, puberulous in young stages; joints 1-4.

_Fl. & Fr._: September-February.

Banks and ridges in open valley. _s.loc._ 1200 m, Wenger 426 (fide C.E.C. Fischer, l.c.).
Fig. 93: *Desmodium laxiflorum* DC.

Fig. 94.

Undershrubs, up to 3 m tall; branches glabrous. Leaves usually 3-foliolate; petioles 1-2.5 cm long; terminal leaflets large, linear-lanceolate to ovate-oblong, 4-10 x 1-3 cm, base rounded, subacute to obtuse at apex, almost glabrous above, appressed pubescent beneath; lateral leaflets very small when present, linear-oblongate, 1-1.5 x 0.2-0.3 cm; petiolules small, ca 1 mm long; stipules ovate-acuminate, 3-15 mm long. Racemes terminal and axillary, 5-12 cm long; bracts ovate; 3-6 mm long; flowers 0.5-0.6 cm long, purple pink to orange or yellow with red stripes. Pods linear, 2-5 x 0.4-0.6 cm, curved, dehiscing and undulating along lower sutures with 5-10 joints, sparsely pubescent with short hooked hairs; seeds elliptic, ca 3 x 2 mm, black.

Fl. & Fr.: October-February.

Common, in evergreen forests. Chhuarlung, 1500 m, Parry 500 (fide C.E.C. Fischer, l.c.) Kawkhulu-Tuichang, K.P. Singh 94441; Champhai, K.P. Singh 94533.


Shrubs, up to 1.5 m tall with trigonous branches; young parts pubescent. Leaves 3-foliolate, coriaceous; petioles 2-6 cm long; leaflets elliptic or oblong-ovate, 5.5-7 x 2-3.5 cm, base rounded or narrowly obtuse, acute at apex, green and lightly adpressed hairy above, densely hairy beneath; lateral nerves 5-6 pairs; petiolules small; stipules lanceolate, 5-10 mm long. Racemes 8-16 cm long, axillary or terminal, sometimes panied; calyx funnel-shaped, glabrous; corolla 5-8 mm long, purplish or nearly white. Pods 2-3 x 0.3-0.4 cm, indented along both sutures and dividing into 4-8 elliptic segments, adpressed hairy, reticulately veined.
Fig. 94: Desmodium motorium (Houtt.) Merr.
Fl. & Fr.: August-December.

Thalāthang, Dutta 33974.


Shrubs, up to 3 m tall. Leaves 1 foliolate, narrowly ovate or elliptic, 5-12 x 2-3.5 cm, base rounded, acute or obtuse at apex, glabrous above, appressed pubescent beneath; petioles up to 1 cm long; stipules lanceolate, 8-10 x 2-3 mm. Flowers in axillary or terminal racemes or panicles; calyx ca 3 mm long, silky; corolla dark blue-purple; pods linear, 2-3.5 x 0.3 cm, curved, indented along both sutures; joints 6-10, ± glabrous.

Fl. & Fr.: August-December.

In open forests on edges of cliffs, s.loc., s.num. 1500-1800 m, Wengen (fide C.E.C. Fischer, l.c.).


Fl. & Fr.: June-December.

Shrubs, up to 3 m high. Leaves 3-foliolate; petioles 0.5-1.5 cm long; leaflets elliptic to ovate-oblong, 4-10 x 2-4 cm, terminal leaflet at least twice as large as lateral ones; base rounded, acute at apex, entire to undulate along margins, glabrous above, finely pubescent beneath; lateral nerves 8-10 pairs; petiolules ca 1 mm long. Inflorescence racemiform, axillary or terminal, consisting of series of paired, leafy, elliptic or suborbicular, 1.4-1.8 x 1-1.5 cm bracts placed on 18-40 cm long densely pubescent stalks; flowers 5-8 mm long, in 2-6-flowered fascicles, each being concealed by a pair of bracts; calyx hairy; corolla white or pale yellow. Pods 1-1.5 x 0.2-0.3 cm, brown when ripe, indented along both sutures, pubescent along sutures, otherwise glabrous, 1-2-segmented, apiculate.

Common, along the ridges of the hills. Neidown-Champhai, 900 m, Leslie 935 (CAL); Champhai-Tangleh, Deb 31065 (CAL); Pullobasti road K.P. Singh 94470.
Fig. 95: Desmodium pulchellum (L.) Benth.

Herbs or undershrubs, up to 75 cm high; branches pubescent. Leaves 3-foliolate; petioles 2-5 cm long; leaflets suborbicular or oblong-obovate, 2-7 x 3-5 cm, base cuneate, obtuse-acute at apex, wavy along margins, glabrate above, appressed pubescent beneath; petiolules ca 2 mm long; stipules setaceous. Racemes 2-30 cm long, mostly terminal; flowers 2-4 in a cluster, laxly placed; bracts caducous, ovate-lanceolate; calyx ca 2 mm long, pubescent; corolla orange or bright-red. Pods ca 1.5 cm long, indented on lower suture, hooked, pubescent; joints 1-3, crescent-shaped.

*Fl. & Fr.*: August-January.

Recorded on the basis of C.E.C. Fischer (*l.c.)*.


Shrubs, 1-3 m tall; branches pubescent. Leaves 3-foliolate; petioles 2-4 cm; leaflets rhomboid-ovate, 4-8 x 2-5 cm, terminal large, lateral ones small, base ± rounded or subacute, acuminate or acute at apex, undulate along margins, subcoriaceous, appressed pubescent on both surfaces, grey beneath; lateral nerves 4-5 pairs; petiolules ca 2 mm long; stipules 4-5 mm long, linear. Racemes 5-15 cm long, terminal and axillary, lax-flowered; flowers 6-8 mm long; calyx funnel-shaped, hairy outside; corolla purple. Pods 1.5-2.5 x 0.1-0.2 cm, indented along both sutures, densely covered with short hooked hairs; joints 6-10, lentil-shaped.

*Fl. & Fr.*: September-January.

Common, in grasslands and forest edges. Denlong village, *K.P. Singh* 94131.
Fig. 96: Desmodium sequax Wallich

Erect shrubs, 0.5-2 m tall; stems triquetrous, appressed with white sericeous hairs when young. Leaves 3-foliolate; leaflets oblance-elliptic to lanceolate, 4.13 x 5.6 cm, acute at both ends, green-glabrous above, densely grey-silky beneath; lateral nerves 10-12 pairs, prominent beneath; petiololes ca 2 mm long; stipules narrowly ovate, 8-15 x 3-5 mm, acuminate. Inflorescence axillary, in dense umbels or corymbs; peduncles up to 1 cm long; bracteoles linear, hairy; calyx whitish, sericeous; corolla white or yellowish, 8-10 mm long. Pods linear, 1-2 cm long, breaking up into 2-5 squarrose segments; seeds ca 2 x 3 mm.

Fl. & Fr.: June-November.

Champhai-Myanmar border, 900-1500 m, Deb 31038; South-Vaniiaphai-Durzo, Dutta 34051; Putlobasu road, ca 900-1000 m, K.P. Singh 94479.


Much branched, ± prostrate perennial herbs; branches hairy. Leaves 3-foliolate; petiololes 3-7 mm long; leaflets obovate, 4-10 x 3-10 mm, base cuneate, rounded or mucronate or emarginate at apex; glabrous above, weakly hirsute beneath; petiololes ca 1 mm long; stipules ca 2-3 mm long; flowers 1-5 together, axillary from upper leaves; calyx teeth sericeous; corolla purplish, violet, whitish-violet. Pods oblong, 8-15 x 2-3 mm, often curved, pubescent, undulate along lower suture; joints 2-5, reticulately veined.

Fl. & Fr.: August-December.

Very common, on ground in shady moist open places along the road side. Lawngtalai-Mampui road, K.P. Singh 92886; Thenzawl, K.P. Singh 938/0; Tibung, K.P. Singh 94267; Kawlkhuih-Hliapui, K.P. Singh 94576.
Fig. 97: Desmodium triangulare (Ktz.) Merr.

Undershubs, 1-2.5 m tall; branches triquetrous. Leaves 1-3-foliolate; ovate-oblong or lanceolate, 5-15 x 2.5 cm, base rounded to truncate, acute or shortly acuminate at apex, coriaceous, glabrous or sparsely scaberulous above, pilose along veins beneath; petioles winged, 1-3 cm long; stipules ovate, 1.5-2 x 0.4-0.6 cm. Racemes or panicles 10-18 cm long, axillary or terminal; bracts linear-lanceolate; 4-5 mm long; calyx 5-6 mm long. Pods strap-shaped, arranged slightly curved, brown when mature, shallowly indented along lower or both sutures; joints 5-8; seeds glossy.

1a. Pods pubescent throughout 1b. Pods pubescent only along sutures


Fl. & Fr.: July-December.

Sake-Saitual, Leslie 100 (CAL); Bunglang, Deb 31428; Thenzawl, K.P. Singh 93838; Kawlhkuli-Hliapui, K.P. Singh 94304; Darlawn-Tipaimukh, K.P. Singh 97095.

16.2. subsp. triquetrum

Fl. & Fr.: August-March.

Champhai, Deb 30957; Keifang, M. Sawmliana 95595.

Fig. 98: Desmodium triquetrum ssp. pseudotriquetrum (DC.) Prain
Flora of Mizoram

Shrubs, up to 3 m tall, branches densely tomentose. Leaves 1-foliolate, broadly ovate, 4-7 x 3-4.5 cm, base truncate or cordate, obtuse to subacute at apex, hispid above, densely soft tomentose beneath; petioles 0.5-1 cm long, hairy; stipules subulate, 2-7 x 1-3.5 mm. Racemes 5-15 cm long, axillary or terminal; flowers in fascicles of 2-5, 2-4 mm across; calyx hairy, campanulate; corolla purplish-pink. Pods narrowly oblong, 1.5-2.5 x 0.2-0.3 cm, indented along both sutures, densely pubescent with hooked hairs; joints 3-6.

Fl. & Fr.: September-February.

Scarcely in moist places along road-side forests. Aizawl- Champhai. 1020-1560 m, Deb 30918.

16. DUNBARIA Wight & Arn.


Climbing herbs, hairy. Leaves 3-foliolate; petioles 1.5-3 cm long; leaflets broadly ovate, 2.5-3 x 1-1.6 cm, base rounded or cuneate, acuminate at apex, entire along margins, puberulous, distinctly gland dotted beneath; petiolules short, 2-3 mm long. Flowers axillary, in pairs, yellow; calyx campanulate, 4-6 mm long, hairy, teeth lanceolate; corolla small, exerted; keel incurved, not beaked. Pods linear, 6-7 x 0.6-0.7 cm, pubescent, compressed, not depressed between the seeds; seeds orbicular.

Fl. & Fr.: September-January.

Scarcely in the area. Near fort Lungleh, 900-1200 m, Gage 192 (CAL); Aizawl, Deb 30642 (CAL).

17. DYSOLOBIUM (Benth.) Prain

Woody climbers with densely brown pubescent stems. Leaves 3-foliolate; petioles 10-15 cm long; leaflets ovate or broadly elliptic, 10-18 x 9-10 cm, terminal leaflet larger, lateral ones oblique; base rounded or truncate, acuminate at apex, green and glabrescent above; scabrid along the nerves beneath; petiolules 3-4 mm long; stipules linear lanceolate, 5-6 mm long, setaceous. Racemes up to 60 cm long, bearing 30-40 flowers; calyx silky with lowest tooth longer than others; petals reddish-purplish; keel beaked, strongly incurved; style filiform, bearded. Pods oblong, 12-20 x 2-3 cm, pointed at both ends, woody, densely brown-velvety outside; channelled along sutures, seeds 8-12.

Fl. & Fr.: July-February.

Aizawl, 900 m, Parry 627 (fide C.E.C. Fischer l.c.).

18. ERIOSEMA (DC.) G. Don


Fig. 99.

Great herbs or undershrubs, 10-70 cm high with densely pubescent stems. Leaves 1-foliolate, linear or oblong, 2-6 x 0.3-0.6 cm, base rounded or cuneate, acute to acuminate at apex, recurved and pilose along margins, green with few adpressed hairs above, densely grey pubescent beneath, midrib brown, pilose; stipules narrowly lanceolate. Flowers axillary, solitary or paired on short peduncles; calyx 5-7 mm long, densely pilose, 5-toothed; petals yellow with purple veins, clawed; standard auricled at base; keel slightly beaked; ovary sessile, 2-ovuled, villous. Pods oblong-elliptic, 7-9 x 5-6 mm, compressed, densely villous, brown, 1-2-seeded; seeds oblong, ca 3 mm long, black.

Fl. & Fr.: July-October, or throughout the year.

Common, in grass lands in open places. s.loc., Parry 10 (CAL); Darzo-Leite, Dutta 34112; Zote, K.P. Singh 94568, 94569.
Fig. 99: Eriosema himalaicum Ohashi
19. **ERYTHRINA** L.

1a. Calyx campanulate, truncate or weakly bilabiate, not deeply divided down to the base. ... 1. *E. arborescens*

1b. Calyx spathaceous, not bilabiate, deeply divided dextrally down to the base:

2a. Spines whitish; calyx entire at tip; keel petal connate; pods 2.3-seeded ... 2. *E. stricta*

2b. Spines brown or blackish; calyx 5-toothed at tip; keel petal free; pods 6.8-seeded ... 3. *E. variegata*


Trees, 5-15 m tall with few brown spines on the branches. Leaves 3-foliolate; petioles 20-25 cm long; leaflets broadly triangular-ovoid, ovate, 12-20 x 12-20 cm, base broadly cuneate, sharply acuminate at apex, glabrous above, hispidulous along the nerves beneath; lateral nerves 5-7 pairs; petiolules up to 1 cm long; stipules lanceolate. Racemes axillary or terminal, 20-25 cm long, flowers 3-3.5 cm long, bright red; calyx 8-10 mm long, shallowly bilabiate, sparsely pubescent; standard ovate-elliptic, orange-red; keel ovate, triangular, pale green. Pods oblong-ellipsoid, 15-20 x 2.2.5 cm, curved, narrowed at both ends, 4-6-seeded, scarcely constricted between the seeds; seeds oblong, 1.5-2 cm long, reniform.

*Fl. & Fr.*: August-February.

*Bukpui*, 900 m, *Parry 617* (*fide* C.E.C. Fischer, *l.c.*).


Trees, 6-20 m tall with whitish, conical incurved spines on branches. Leaves pinnately 3-foliolate; petioles 12-20 cm long; leaflets ovate, 10-20 x 8-20 cm, base rounded, acute or acuminate at apex, glabrous and shining above, glaucous and minutely hairy along the nerves beneath; lateral nerves 6-8 pairs; petiolules 8-12 mm long; stipules falcate. Racemes 15-18 cm
long, crowded at the end of branchlets; flowers coral red, appearing before leaves; calyx spathaceous, ca 15 mm long, deeply divided dorsally; brown pubescent; standard scarlet, ovate; keel scarious. Pods spindle shaped, 7-12 x 0.5-1.2 cm, sharply pointed, glabrous outside, 1-3-seeded, scarcely constricted; seeds kidney-shaped, oblong, ca 15 mm long, red.

Fl. & Fr.: January to April.

Near fort Lungleh, 900-1200 m, Gage 112 (CAL); Saiyep village forest, K.P. Singh 94130.


Trees, up to 30 or 40 m tall, spines minute, conical, brown or blackish. Flowers purplish-scarlet; calyx 18-25 mm long with a very oblique mouth, minutely 4-toothed, spathaceous, glabrescent. Pods 15-30 x 1.5 cm, curved, constricted between the seeds, glabrous, 6-8-seeded; seeds oblong, ca 17 mm long, reddish brown or purplish.

Fl. & Fr.: March-September.

Cultivated as hedge plant. Recorded on the basis of C.E.C. Fischer (L.c.).

20. **EUCHRESTA** Bennett


Low growing, erect shrubs, 0.7-1.5 m high with glabrous branches and leaves. Leaves 3-5-foliolate; leaflets elliptic or oblong, 12-18 x 4-8 cm, base rounded or cuneate, acute or acuminate at apex; stipules small, subulate; petioles narrowly winged. Flowers in terminal or leaf opposite, 4-10 cm long racemes; bracts 2-3 mm long; calyx campanulate, 8-10 mm long, with broadly triangular teeth; petals white, standard not clawed; wing and keel petals clawed. Pods oblong, 10-18 x 8-10 mm, glabrous, purplish black, 1-seeded, rather fleshy.
Fl. & Fr.: May.

North-Vanlaiphai, Deb 31155 (CAL).

21. **Flemingia** Roxb. ex Ait. & Ait. f.

1a. Leaves simple; flowers in small cymes, hidden by reniform, suborbicular, strongly reticulate, persistent bracts...3. *F. strobilifera*

1b. Leaves 3-foliate; flowers in dense spicate or subspicate axillary racemes, not hidden by bracts; bracts caducous:

2a. Leaflets elliptic-ovate, 6-9 x 3.0-4.5 cm; petioles 3-7 cm long; stipules 5-10 mm long...1. *F. macrophylla*

2b. Leaflets ovate-lanceolate, 10-26 x 5-12 cm; petioles 7-13 cm long; stipules 4-6 cm long...2. *F. stricta*


Fig. 100.

Shrubs, 1-2 m tall with angular branches, appressed sericeous when young. Leaves 3 foliate; petioles 3.7 cm long, narrowly winged; leaflets elliptic-ovate or oblong-lanceolate, 6-13 x 3-5.5 cm, base cuneate or rounded, oblique in lateral leaflets, acute or shortly acuminate at apex, glabrescent or ± scabrous above, pubescent along the nerves and gland dotted beneath; petiolules ca. 3 mm long; stipules lanceolate, 5-10 mm long. Flowers in axillary, 5-9 cm long racemes or sometimes in terminal panicles; bracts ovate; flowers 1-1.3 cm long, purplish; calyx densely silky, gland dotted; corolla greenish-white with pink stripes. Pods ovoid-ellipsoid, 10-12 x 7-8 mm, turgid, brown, velvety, 2-seeded; seeds black, shiny.

Fl. & Fr.: April-February.
Fig. 100: Flemingia macrophylla (Willd.) O. Kuntze ex Merr.
Common, on slopes in open forests. Neidown, Leslie 231 (CAL); Champa, Deb 3088; Champa-Myanmar border, Deb 31251; Panchagaram, Deb 31482; Thartlang, Dutta 3397; Kavtkukh-Iliapui, K.P. Singh 94399; Kaifang, M. Sawanitana 99258; Sangau, 1100 m, Mao 107186.


Shrubs, up to 4 m tall; branches angular, hairy. Leaves 3-foliolate; petioles narrowly winged, 7-13 cm long; leaflets ovate-lanceolate, 10-26 x 5-12 cm, base rounded or cuneate, in laterals oblique, acuminate at apex, subcoriaceous, glabrous or puberulent above, pubescent along the nerves and glandular dotted beneath; petiolules 3-5 mm long; stipules 4-6 cm long, lanceolate, silky outside, longitudinally veined. Racemes 8-13 cm long, densely flowered, spicate; bracts caducous, lanceolate; flowers 1-1.3 cm long; calyx tube 2-3 mm long with long teeth; petals purple. Pods ellipsoid, 12-15 x 7-8 mm, glabrescent.

*Fl. & Fr.*: January-September.

Common, in shady and damp places. Sairang-lengpipu, G.K. Deka S.n.; Darla, Deb 3422; Aizawl, Dutta 30649; Champa, K.P. Singh 94520.


Shrubs 1-5 m tall with terete ± hairy branches. Leaves simple, ovate-lanceolate, 7-16 x 3-6.5 cm, base rounded or truncate, acuminate at apex, chartaceous, glabrescent or glabrous above, minute glandular and pubescent beneath; lateral nerves 8-12 pairs; petioles 5-8 mm long, pubescent; stipules lanceolate, 8-10 mm long. Flowers 6-8 mm long, purplish, 1-3, hidden in the axils of reniform or suborbicular membranous,
puberulous bracts, 1.5-2.5 cm across, bracts arranged in terminal and axillary, 7-15 cm long racemes; calyx velvety and gland dotted outside with lanceolate teeth; petals white with purplish lines; glabrous. Pods ellipsoid, 8-10 x 7 mm, finely pubescent, 2-seeded.

Fl. & Fr.: February-May.

Changsai, Prazer, s. num. 1890 (CAL); s. loc., Parry 8 (CAL); Champhai-Myanmar border, Deb 31049.

22. INDIGOFERA L.

1a. Pods distinctly curved

1b. Pods straight:

4a. Young shoots densely brown hisate; leaflets 37-53

4b. Young shoots glabrous or bearing appressed hairs; leaflets 5-15:

3a. Leaflets 5-7, obovate or oblanceolate, 4-10 x 3-4 mm

3b. Leaflets 7-15, much larger

4a. Leaflets elliptic-oblong or obovate; 30-50 x 15-20 mm; racemes 15-30 cm long

4b. Leaflets elliptic-oblong, 15-25 x 6-9 mm; racemes 3-5 cm long

1. Indigofera arrecta Hochst ex A. Rich., Tent. Fl. Abyss. 1; 184, 1847.

Erect undershrubs, 1-2 m tall with strigose stems. Leaves 5-10 cm long, 9-15-foliolate; leaflets elliptic-oblong, 1.5-2.5 x 0.6-0.9 cm, base cuneate, obtuse-mucronate at apex, thinly appressed pubescent on both surfaces; petiolules ca 1 mm long, stipules setaceous. Racemes 3-5 cm long, axillary; flowers 3-4 mm long, pink-reddish; calyx campanulate with lanceolate teeth, pubescent. Pods linear, 15-20 x ca 2 mm, straight, beaked, appressed pubescent, 8-seeded, reflexed, usually borne near the base.

Fl. & Fr.: September-November.

Probably cultivated. Thenzawl, K.P. Singh 93855.

Erect shrubs, 1-2 m tall with nearly glabrous branches. Leaves 13-22 cm long, 7-15-foliolate; leaflets elliptic or obovate, oblong, 3-8 x 1.5-2 cm, base rounded or cuneate, obtuse-mucronate at apex, sparsely appressed pubescent on both surfaces; petiolules 2-3 mm long. Racemes 15-30 cm long, axillary; flowers ± 1 cm long; corolla crimson red or pink. Pods linear, 30-40 x 3 mm, straight, beaked at apex, deflexed, 6-10-seeded; seeds red.

*Fl. & Fr.:* May-September.

On open hillsides, Aizawl-Champhai road, *Deb* 30904.


Erect shrubs, up to 2 m tall; young parts greyish pubescent. Leaves 5-7-foliolate; petiolules 3-4 mm long; leaflets obovate or oblanceolate, 4-10 x 3-4 mm, base cuneate, obtuse to mucronate at apex, appressed pubescent on both surfaces; petiolules ca 1 mm long; stipules thin and small. Racemes up to 3 cm long; flowers 8-10 mm long, pink or purple; calyx 2-3 mm long with lanceolate teeth, hairy; standard petal obovate. Pods linear, 20-28 x 2.5 mm, pubescent.

*Fl. & Fr.:* May-July.


Fig. 101: Indigofera stachyodes Lindl.
Shrubs, up to 4 m tall with densely brown hirsute branches. Leaves 8-16 cm long with 37-53 leaflets; leaflets narrowly oblong, 8-25 x 3-7 cm, base rounded or cuneate, acute-mucronate at apex, densely appressed pubescent on both surfaces, sessile to subsessile. Racemes 10-16 cm long, many-flowered; flowers pink or purple, 8-10 mm long. Pods linear, 20-30 x 3-4 mm, straight, shortly beaked, brown when ripe, pubescent, 10-12-seeded, hanging downwards.

Fl. & Fr.: April-September.

On open hill sides. Vawmbuck-Thaltlang, Dutta 33904; Phongpui, K.P. Singh 96817.

5. Indigofera suffruticosa Mill., Gard. Dict. ed. 8, no.2. 1768.

Small undershrubs, 1-2 m tall with appressed pubescent branches. Leaves 5-9-foliolate, 4-6 cm long; leaflets obovate-oblong, 8-15 x 3-5 mm, base cuneate, obtuse-mucronate at apex, ± glabrous above, appressed pubescent beneath; hairs white, petiolules ca 1 mm long. Racemes 1.5-3 cm long, 10-20-flowered, axillary; flowers reddish-orange. Pods linear-oblong, 10-17 x 2-3 mm, shortly beaked, strongly curved, not torulose, brown, appressed pubescent, hairs white, 5-8-seeded, deflexed; seeds black, ca 2 mm across.

Fl. & Fr.: September-December.

Probably cultivated in open places. Khawrullian Forest rest house, K.P. Singh 97127.

23. Lablab Adanson


Large twining herbs with sarmentose branches. Leaves 3-foliolate, 10-30 cm long; petioles up to 10 cm long; leaflets 4-10 x 3-8 cm, terminal one ovate-deltoid; laterals ovate, inequilateral, base truncate or cuneate, acuminate at apex, ciliate along margins, pubescent, 3-5-nerved from base; petiolules 3-4 mm long; stipels triangular; stipules lanceolate. Racemes 15-20 cm long, lax on peduncles; bracts ovate; flowers 1.5-2.5 cm long; calyx
pubescent at mouth, campanulate; corolla white or purple; style incurved, laterally flattened, pubescent on inner side. Pods oblong with persistent style, 5-12 x 2.3 cm, white, pink or purple, glabrous. 5-6-seeded; seeds ellipsoid, 9-12 x 6.9 mm, compressed, black.

Fl. & Fr.: September-January.

Various forms are cultivated in villages for vegetable. Sonai-Sakaechu, Leslie 62 (CAL); North-Valnaiphai, Deb 31174.

24. Macrotyloma (Wight & Arn.) Verd. 


Twining herbs with hairy stems. Leaves 3-foliolate; petioles 2-3 cm long; terminal leaflets large, ovate-rhomboid, 3-3.5 x 1.3-2 cm, lateral ones elliptic or obovate 2-3.5 x 1.3-2 cm, inequilateral; base rounded, acuminate or obtuse at apex, entire along margins, membranous, pilose or pubescent on both surfaces; petiolules ca 2 mm long; stipules lanceolate. Flowers sub sessile 1-3 in clusters, independently in the axils of leaves without a common peduncle, 1.2 cm long, yellow; calyx hairy, campanulate; 5-7 mm long; teeth lanceolate, setaceous, much exceeding the tube; corolla 1-3.5 cm long; keel slightly curved. Pods linear, 3.5-5 x 0.5-1 cm, pubescent with a persistent style, dehiscing along both the sutures, 5-8-seeded; seeds reniform, brownish.

Fl.: January-May; Fr.: Throughout the year.

Common in open places. Hauzng, 4 miles from Langleh, 666 m, Deb 31410; Sawleng, K.P. Singh 97119.

Note: Dolichos trilobus L. was recorded by Deb & Dutta (1987) from Mizoram, but the identification of the specimen is erroneous.

28. MEIZOTROPIS Voigt


Erect shrubs; young parts covered with grey tomentum. Leaves 3-foliolate; common petioles 10-20 cm long; leaflets obliquely ovate-elliptic, terminal leaflets rhomboid or obovate, 12-40 x 8-28 cm, base rounded or truncate, acute at apex; appressed hairy above and silky tomentose beneath; lateral nerves 7-9 pairs, oblique; petiolules up to 1.5 cm long. Racemes 10-50 cm long; flowers 2.5-4 cm long, deep orange-red; calyx 6-7 mm long, brown pubescent; petals oblong-elliptic, silky tomentose in lower half. Pods oblong, 7-10 x 2-3.5 cm, compressed, wing like, containing one orbicular-distal seed, rusty-tomentose; seeds obovate, 1.5-2 cm across, brownish-shiny.

Fl. & Fr.: July-January.

Scarce, in dry open hill sides. Durlang, 1500 m. Parry 304 (fide C.E.C. Fischer, l.c.); Champhai, Myanmar border, Deb 31033; North Vanlaiphai, D.K. Singh 93085; Kawhikulhu-Tuichang, K.P. Singh 94450.

26. **MILLETTIA** Wight & Arn.

1a. Climbers; racemes panicked:

2a. Leaflets 11-17, pubescent beneath; standard petal glabrous; stamens monadelphous; pods not compressed, glabrous

3a. Standard petal orbicular, auricled

3b. Standard petal broadly ovate, not auricled

1b. Trees or erect shrubs; racemes simple:

4a. Leaflets 15-21, pubescent beneath; stamens monadelphous

4b. Leaflets 5-7, glabrescent beneath; stamens diadelphous:

5a. Leaflets 5 only, ovate-elliptic, shortly acuminate at apex; flowers blue; fruits linear-oblong

5b. Leaflets 5-7, obovate-oblong, cuspidate at apex; flowers white; fruits piciform

...5. *M. piscidia*

Large, woody climbers. Leaves 14-30 cm long, 5-foliolate; leaflets very variable, elliptic-obovate, 8-12 x 3-5.5 cm, base rounded to obtuse, shortly acuminate at apex, glabrous above, sparsely pubescent on veins beneath; petiolules 4.5 mm long; lateral nerves 7.9 pairs; stipels subulate. Racemes in terminal, 10-20 cm long silky pubescent panicles; flowers ca 1.5 cm across; calyx silky; petals crimson or purplish; standard petal not auricled, silky outside, 7-10 x 2 cm. Pods compressed, brown velvety, constructed between seeds. 1-3-seeded.

*Fl. & Fr.*: June-December.

Sialsuk, 1500 m. *Parry* 409 (fide C.E.C. Fischer, *l.c.*); North Vanlaiphei, Leslie 340 (CAL).


Woody climbers with puberulous branchlets. Leaves 5-foliolate; leaflets ovate-oblong, elliptic to obovate-oblong, 5-11 x 2-5 cm, base rounded or obtuse, apex shortly acuminate, coriaceous, young minutely hairy, otherwise glabrous and reticulate, pale beneath; petioles and petiolules hairy and swollen. Racemes densely paniculate, terminal; calyx 3-4 mm long, pubescent; standard petal biauriculate, orbicular, tomentose; stamens diadelphous. Pods linear, 2-4 x 0.4-0.5 cm, compressed, pointed upwards, densely brown pubescent.

*Fl. & Fr.*: April-July.

Scarce. Known earlier from Myanmar only. Saireep forest, *Dutta* 33584.

Tall climbers; young parts brown, velvety. Leaves 30-40 cm long, young ones silvery, 11-17-foliolate; leaflets obovate or oblanceolate, 6-18 x 2.5-6 cm, base cuneate, abruptly acuminate at apex, glabrous above, densely appressed brownish tomentose beneath; petiolules 4-6 mm long; stipules deltoid. Panicles 12-30 cm long, brown velvety; flowers 2-2.5 cm long; calyx densely brown pubescent; corolla pink or light mauve. Pods 6-20 x 3-5 cm, constricted between seeds, 1-3-seeded, woody, rugose, glabrous; seeds reniform, ca 3 x 2.5 cm.

Fl. & Fr.: March-December.

Common, along the road cuttings in open places. Zoteihlang, K.P. Singh 92816; Kolasib-Builung, K.P. Singh 93141; Hnahthal-Lungleh road, K.P. Singh 94181; Pheiileng, K.P. Singh 97084.


Medium trees with glabrous branches. Leaves 10-20 cm long, 7-foliolate; leaflets ovate-elliptic, 4-7 x 1.5-3.5 cm, base rounded, acuminate at apex, chartaceous, glabrous above, glaucous beneath; lateral nerves 6-8 pairs; petiolules 3-4 mm long. Racemes lax, solitary or several from short young branchlets, 10-18 cm long; flowers 7-8 mm long, blue; calyx purple, glabrous; corolla glabrous. Pods linear-oblong, 5-9 x 1.5 cm, narrower towards base, incurved-pointed, flat, woody, glabrous, 2-3-seeded.

Fl. & Fr.: February-June.

Scarce in the area. Known earlier from Myanmar only. Taltaw, Dutta 33215.


Medium sized trees, up to 16 m tall. Leaves 10-20 cm long, (3-) 5-7-foliolate; leaflets ovoate-oblong or lanceolate, 5-10 x 0.8-1.5 cm, base rounded or obtuse, bluntly cuneate-acuminate at apex, glabrous on both sides or glabrous beneath; lateral nerves 6-8 pairs; petiolules 3-4 mm long;
Fig. 102: Millettia pegaensis Ali
stipules minute, caducous; Racemes lax flowered, up to 10 cm long; flowers 1-1.5 cm long; calyx glabrous; stamens diadelphous. Pods piciiform, 6-12 x 2.0-3.5 cm, drooping, compressed, narrowed at both ends, coriaceous, surface smooth to reticulate, 2-4-seeded; seeds oblong, ca 1.8 x 1.2 cm.

Fl. & Fr.: June-December.

Zawbawk, 900 m, Parry 390 (fide C.E.C. Fischer, l.c.).


Shrubs or small trees, 4-10 m tall; young parts tomentose. Leaves 15-25 cm long, 14-21-foliolate; leaflets 2.5 x 1-2 cm, narrow elliptic or elliptic-lanceolate, variable at both ends, sometimes mucronate-obtuse at apex, glabrous above, acute adpressed, silky pubescent and bluish grey beneath; stipules ligulate; petiolules ca 2 mm long; lateral nerves ± 7 pairs; Racemes axillary, 8-16 cm long; flowers 1.2-1.5 cm long; calyx hairy; corolla reddish-purple; stamens monadelphous. Pods 5-10 x 1-1.5 cm, compressed, pointed above, appressed hairy, usually 2-3-seeded; seeds sub-orbicular, reddish-brown.

Fl. & Fr.: April-December.

Mimbung, Parry 160 (fide C.E.C. Fischer, l.c.); Tilthlang, K.P. Singh 96644.

27. MUCUNA Adamson

1a. Pods obliquely plaited on the faces:
   2a. Pods winged, 2-4-seeded ... 2. M. imbricata
   2b. Pods not winged, 1-seeded ... 3. M. monosperma

1b. Pods not plaited on the faces:
   3a. Bracts prominent; calyx lobes linear; pods lacking longitudinal furrows ... 1. M. bracteata
   3b. Bracts small; calyx bilipped; pods longitudinally furrowed ... 4. M. pruriens

Climbers; young parts pubescent. Leaves 3-foliolate; petioles 10-12 cm long; leaflets 5-12 x 5-9 cm, terminal rhomboid, laterals obliquely ovate or deltoid, base rounded, truncate, acute at apex, glabrescent above, appressed pubescent beneath; petiolules 3-4 mm long. Racemes axillary, 15-25 cm long; flowers 3.5-4.5 cm long, blackish-purple; bracts ovate, pubescent with scattered bristles, calyx and corolla covered with scattered bristly hairs, wings much longer than standard; keel exceeding the wings. Pods terete, 7-10 x 1.5-2.5 cm, reddish-brown, tomentose without longitudinal furrows, abruptly recurved at the ends; 5-6-seeded.

*Fl. & Fr.*: January-May.

Ketumkaw, 600 m, Parry 651 (*fide* C.E.C. Fischer, *l.c.*); Saitualdoth, 900 m, Leslie 152 (CAL); Silutsch, Deb 30870.


Large, woody climbers with glabrescent branches. Leaves 3-foliolate, 20-40 cm long, petioles 5-10 cm long; leaflets ovate or rhomboid, 10-15 x 4-10 cm, base rounded or cuneate, acute-mucronate at apex; glabrous above, glabrescent beneath; petiolules 4-5 mm long. Racemes 10-20 cm long, laxly 8-10-flowered; bracts broadly ovate, 2.5-3 x 2-2.5 cm long; flowers 5-6 cm long, purple; calyx campanulate, bristly hairy; keel abruptly reflexed. Pods oblong, 8-15 x 5-6 cm, winged at both sutures, obliquely plaited, densely covered with ferruginous bristles, 2-4-seeded; seeds large, flat, purplish streaked with black.

*Fl. & Fr.*: June-March.

Lungleh, 900 m, Gage 225 (CAL).

Large, woody climbers with glabrescent branches. Leaves 3-foliate; leaflets ovate-oblong, lateral ones very oblique, 7-10 x 5-6 cm, base rounded, abruptly acuminate at apex, sub-coriaceous, glabrous above, ferruginous pubescent beneath; petiolos 5-8 cm long; petiolules 5-6 cm long, pubescent. Racemes axillary, 5-10 cm long, corymbose; 6-12 flowered; flowers 4-5 cm long, purple; calyx bowl-shaped, bristly reddish hairy outside and inside; keel slightly longer, greenish. Pods ovate-ovoid, ca 5 x 3 cm, densely reddish brown, bristly tomentose. 1-seeded.

Fl. & Fr.: November-February.

Between Gatermuk-Changsil, Frazier 1890, s.nov. (CAL).


Annual climbers or short lived perennials with silvery pubescent stems in younger stages. Leaves 3-foliate; leaflets elliptic or ovate, 6-15 x 5-12 cm, rounded at base, obtuse or acute at apex, glabrescent above, silvery appressed pubescent beneath. Racemes 5-20 cm long, 10-20-flowered; bracts and bracteoles small; flowers 3.5-4.5 cm long, dark purple; calyx bilipped, tomentose, intermixed with some brown bristles. Pods S-shaped, turgid, 5-8 x 1.5-2 cm, terete, longitudinally ridged, covered with brown bristles, 5-6-seeded; oblong-ellipsoid, seeds 8-12 x 5-7 mm, blackish, glossy.

Fl. & Fr.: January-December.

Sairep, Dutta 33605; Keifang, *M. Sawmliana* 99273.

28. **PUERARIA** DC.

1a. Large climbers; stipules modified; calyx deeply toothed, 12-20 mm long; pods brown hisrate

2a. Sub-scandent shrubs; stipules basifixed; calyx obscurely toothed, 5-6 mm long; pods glabrous

...1. *P. lobbata var. thomsonii*

...2. *P. wallichia*

Large climbers; branches clothed with deflexed brownish hairs. Leaves 3-foliolate; petioles 8-15 cm long, brown-pilose; leaflets simple or 3-lobed, ovate, or ovate-rhomboid, lateral oblique, 10-16 x 7-16 cm, base rounded, shortly acuminate at apex, appressed brownish pubescent on both surfaces; laterals nerves 5-7 pairs; petiolules 5-6 mm long; stipules fixed by the middle, 10-15 mm long, brown, velvety. Racemes simple, 20-40 cm long; flowers slightly scented, 1.8-2.5 cm long, blue or purple; calyx purplish-green, deeply cleft, 12-20 mm long, pubescent. Pods oblong, 8-13 x 1.2 cm, oblong, flat, straight, densely brown, hirsute, 8-12-seeded.

*Fl.* & *Fr.*: August-October.

Common in jhum lands and along the roadside ridges. *Parry s.n.* (CAL); Kwathilir, 900 m, *Parry 202* (*sive* C. E. C. Fischer, *l.c.*); s. loc., *Dutta 34044* (CAL); Thanawal, K. P. Singh 93815; Kawkhuin-Tuichang, K. P. Singh 94413; Dampa, D. K. Singh 98980.


Semi climbing shrubs with pubescent stems. Leaves 3-foliolate; petioles 8-12 cm long; lateral leaflets obliquely ovate, terminal elliptic or subrhomboid, 5-12 x 6-8 cm, base cuneate or rounded, often oblique acuminate at apex, ± scabrous and green above, minutely white adpressed pubescent beneath; lateral nerves 6-8 pairs; petiolules 4-5 mm long; stipules linear, basifix; 5-7 mm long. Racemes axillary, 7-20 cm long, densely flowered, puberulous; calyx obscurely toothed, 5-6 mm long; corolla white or greenish-yellow or white tipped with red; stamens diadelphous. Pods linear, flat, straight, 8-15 x 0.8-1 cm, glabrous, thickened along both sutures, 8-10-seeded; seeds reniform, brown.
Fl. & Fr.: August-January.

S. num., Parry (CAL); Sherkor, 1200 m. Parry 416 (fide C.E.C. Fischer, l.c.): s.loc., Dutt 33922.

29. RHYNCHOSIA Lour.


Climbing herbs, densely tomentose. Leaves 3-foliolate; petioles 4-6 cm long; leaflets ovate-rhomboid, 9-13 x 4.5-7 cm, laterals oblique, base rounded, acute at apex, densely soft tomentose on both surfaces; petiolules ca 2 mm long. Racemes axillary, many-flowered; bracts silky, lanceolate; calyx densely grey silky; tooth long, lanceolate; corolla purple, standard petal auricled at base. Pods oblong, 1.5-2 x 0.5-0.7 cm, recurved, beaked at tip, densely pubescent, turgid, 2 seeded; seeds 5-6 mm long, ellipsoid, blackish.

Fl. & Fr.: September-January.

Bunglang, Deb 31435—identified earlier as R. acutissima Thw.

30. SESBANIA Scop.


Annual undershrubs with glabrous, unarmed branches. Leaves 15-26 cm long; leaflets 41-81, linear-oblong, 12-20 x 2-3 mm, base rounded, obtuse-mucronate at apex, glabrous on both surfaces; petiolules ca 1 mm: Racemes axillary, laxly 3-6-flowered; flowers 10-13 mm long, yellow; calyx glabrous; stamens didelphous. Pods elongated, narrow, straight, 18-24 x 0.2-0.3 cm, not torulose, apically beaked with a persistent style. glabrous; seeds cylindrical, numerous.

Fl. & Fr.: August-November.
Scarce, along the road side. Tuichang new bridge. *K.P. Singh* 94245.

31. **Shuteria** Wight & Arn.

1a. Leaflets ovate, cuspitate at apex, 3-veined at base, adpressed hairy on both sides. 5-10 mm long; pods 3-7 cm long

1b. Leaflets ovate or obovate-oblong, obtuse-micronate at apex, pinnately veined at base, hairy beneath only. 3-5 cm long; pods 2-3 cm long

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Stems strongly brown hirsute. Leaflets 5-10 x 3-6 cm, acuminated at apex, 3-veined at base; stipules 8-10 mm long. Racemes elongated; bracts 10-12 mm long, linear-lanceolate; calyx 6-8 mm long; petals blue. Pods 5-7 x 0.3 cm, 12-14-seeded.

*Fl.* & *Fr.*: October-December.

Scarce, in subtropical forests. Thalitlang, *Deb* 33960.


*Fig.* 103.

Climbers with patently hairy stems. Leaves 3-foliolate; petioles very thin, 3-5 cm long; leaflets ovate or obovate-oblong, 3-5 x 1.5-3.5 cm, base subacute or rounded; obtuse-micronate at apex, glabrous or glabrescent above, adpressed pubescent beneath; stipules ca 1 mm long, hirsute; stipules 7-8 mm long, lanceolate. Racemes axillary, short and crowded, many-flowered, patently hairy; bracts lanceolate, persistent, 4-5 mm long; bracteoles little smaller; flowers 10-12 mm long; calyx densely pubescent; petals purplish; stamens diadelphous. Pods linear, 2-3 x 0.5-0.6 cm.
Fig. 103: Shuteria vestita (Wallich) Wight & Amr.
compressed, brownish, pubescent, apically beaked, 5-6-seeded; seeds ca 3 x 2 mm, shiny, dark brown or mottled.

Fl. & Fr. : November-January.

Common, in subtropical forests or dry places. Neidown, Champhai, Leslie 283 (CAL); Sairang, Deb 30973; South-Vanlaiphai-Darzo, Dutta 34046, K.P. Singh 96969.

32. SOPHORA L.


Erect shrubs or small trees, up to 6 m tall; young parts rusty villous. Leaves imparipinnate, 10-20 cm long; leaflets opposite to rarely subopposite, 7-17, oblong or obovate-oblong, 3-6 x 1.5-2 cm, cuneate or rounded at base, acuminate or obtuse at apex, entire along margins, glabrous above, adpressed hairy beneath, lateral nerves 10-12 pairs; petiolules short ca 1 mm long. Flowers in axillary peduncled racemes, white or yellow, 2-2.5 cm long; calyx 10-12 mm, pockled at base; petals white, long clawed, standard obovate, ca 15-18 cm long. Pods distantly moniliform, 5-15 cm long, 1-2 seeded, rusty pubescent; seeds ellipsoid, 10-15 x 7-8 mm.

Fl. & Fr. : May-June.

Scarce. s. loc. M. Sawmliana 97158.

33. SPATHOLOBUS Hassk.


Fig. 104.
Fig. 104: *Spatholobus parviflorus* (Roxb. *ex* DC.) O. Kuntze
34. TEPHROSIA Pers.


Shrubs, 2-4 m tall with densely brown, tomentose stems. Leaves 10-20 cm long, imparipinnate; leaflets 11-25, elliptic-oblong, 3-7 x 1-1.5 cm, base cuneate, acute- acuminate at apex, revolute along margins, glabrous or glabrescent above, pale sericeous beneath; lateral nerves numerous; petiolules 2-3 mm long; stipules deltoid, hairy. Racemes terminal or upper axillary, 10-20 cm long; flowers in fascicles of 2-4; calyx campanulate, oblique, hairy; corolla creamy-white, silky outside; standard petal obovate. Pods linear, 7-9.5 x 0.7-0.8 cm, compressed with tipped persistent style, brown sericeous, 10-12-seeded; seeds oblong or ellipsoid, ca 5 x 3 mm, brown.

Fl. & Fr.: August-January.

Common, in open hilly slopes, grasslands and on the ridges, along the road side. Sairang, Deb 305/9; Panchagram, Deb 514/8; Bualpur-Kawnpuri, K.P. Singh 93256; Thenzwai, K.P. Singh 93856; Hnahial Forest rest house, down side, K.P. Singh 93997; Hnahial-Lungleh road. K.P. Singh 94182.
Fig. 105: Tephrosia candida DC.
35. Uraria Desv.

1a. Upper leaves 3-7-foliolate

1b. Upper leaves 1-3-foliolate:

2a. Leaflets ovate-elliptic, 1-3-foliolate, glabrous above

2b. Leaflets ovate-lanceolate, 3-foliolate, adpressed pubescent above

....2. U. fasciata


Shrubs, up to 2 m tall. Leaves 15-25 cm long, 3-7-foliolate; petioles 6-12 cm long; leaflets oblong, 6-11 x 2-5 cm, base rounded, acute to mucronate at apex; coriaceous, glabrous above and strongly net veined and hair along the nervules beneath; petiolules ca 2 mm long. Racemes 5-34 cm long, simple, terminal, hairy; bracts ciliate; calyx segments densely plumose; corolla purple. Pods compressed, divided transversely into 4-6 opaque segments, each folded over the other, each segment ca 3 mm across, black, 1-seeded; seeds orbicular.

Recorded on the basis of C.E.C. Fischer (l.c.).


Shrubs, up to 1.25 m high with brown, hairy, sulcate stems. Leaves 3-foliolate; leaflets ovate-lanceolate, 10-15 x 4-5 cm, terminal larger, base obtuse mucronate at apex, adpressed pubescent above, pilose beneath specially on nerves. Flowers in terminal panicles, up to 30 cm long; bracts caducous, ovate; calyx lanceolate-acute; corolla dark blue. Pods 6-jointed, glabrescent.

Fl. & Fr.: October-December.

70 miles South-East of Lungleh in river bed, 600 m, Wenger 358, (l.c. C.E.C. Fischer, l.c.).

Undershubs, up to 2 m tall; branches erect, brown hirsute. Leaves 1-3-foliolate; petioles 1-3 cm long; stipules setaceous; leaflet oblong-elliptic to ovate-elliptic, 5-13 x 3-7 cm, broadly rounded at base, acute or obtuse at apex, entire along margins, glabrescent above, pubescent on nerves beneath; lateral nerves 10-18 pairs; stipels setaceous. Racemes panicked, lax, 15-28 cm long, terminal or axillary; bracts silky pubescent, ovate; corolla purplish; standard obovate, 8-12 mm long. Pod segments 5-6, rounded, ca 2 mm across, brown or black, tightly folded on each other.

*Fl. & Fr.*: August-December.


36. **VIGNA Savi**


Climbing herbs with slender branches. Leaves 3-foliolate; petioles 6-8 cm long; leaflets ovate, lanceolate, 5-11 x 3-6 cm, laterals oblique, base rounded, acuminate at apex, appressed pubescent on both sides; petiolules ca 1 mm long; stipules 0.5 mm long, base rounded. Racemes 5-12 cm long, axillary, 10-20-flowered; bracts and bracteoles minute; calyx silky, 4-5 mm long; corolla reddish; keel incurved. Pods linear, beaked, 5-7 x 0.5-0.7 cm, densely hirsute with spreading hairs, 8-12-seeded; seeds oblong, black.

*Fl. & Fr.*: July-October.

Hau ruang, *Deb* 31369.

**CULTIVATED SPECIES**

Fig. 106: Uraria rufescens (DC.) Schindler
Probably a native of Brazil, widely cultivated.

EXCLUDED TAXA


CAESALPINIACEAE

(D.K. Singh)

1a. Flowers unisexual, in small racemes or panicles

1b. Flowers bisexual, in extensive racemes or spikes

2a. Calyx segment petaloid; petals absent

2b. Calyx segment not petaloid; petals present

3a. Leaves unipinnate:

4a. Leaves simple, bilabed

4b. Leaves compound:

5a. Petals 3; stamens 3, monadelphous

5b. Petals 5; stamens more than 3, free
6a. Stamens equal, all perfect; anther cells
    dehiscing by longitudinal slits ... 7. Maniram

6b. Stamens unequal, usually 3-5,
    reduced to staminodes, anther cells
    dehiscing by terminal pores ... 4. Crassva

3b. Leaves bipinnate:

7a. Usually woody, armed, climbers or small trees ... 3. Caesalpina

7b. Unarmed, small to medium trees:

8a. Leaflets 5-12 cm long; calyx segments
    equal; stamens 5; pods 15-20-seeded ... 1. Acrocarpus

8b. Leaflets 0.5-2 cm long; calyx segments
    unequal, stamens 10; pods 20-40-seeded ... 5. Delonix

1. ACROCARPUS Wight & Am.

   1938.

   Large, deciduous, unarmed trees, up to 35 m tall with wide spreading
   crown; stems sometimes buttressed; bark grey-dark brown, warty;
   branchlets densely lenticellate; young shoots and inflorescence reddish-
   brown tomentose. Leaves bipinnate, up to 1 m long; pinnae 15-30 cm long;
   leaflets 10-12, oblong-ovate or oblong-lanceolate, 5-12 x 1.8-5.5 cm,
   unequal or cuneate at base, acuminate at apex, subcoriaceous, glabrous;
   lateral nerves 7-10 pairs, petiolules ca 2 mm long. Racemes simple, dense,
   ca 30 cm long; flowers ca 2.5 cm long, dull red-orange; calyx 0.8-1 cm
   long, campanulate, brown pubescent, cleft half way down; lobes 5, equal,
   lanceolate-ovate, acute; petals 5, linear oblong or ob lanceolate, ca 1 cm
   long, slightly imbricated in bud. Pods 10-15 cm long, winged on the upper
   suture, 15-20-seeded; seeds compressed.

   Fl. & Fr.: February-June.

   Parry s. loc. & s. num. (sede C.E.C. Fischer, t.c.).
2. BAUHINIA L.

1a. Large scandent shrubs:

2a. Stem flat or ribbon-like, twisted on alternate side

... 5. B. scandens var. anguina

2b. Stem otherwise:

3a. Leaf lobes acute or acuminate:

4a. Leaves glabrous on both surfaces

... 2. B. khaziana

4b. Leaves pubescent on underside:

5a. Leaves broadly ovate, 20 x 19-21 cm,
cleft 1/2 way down, underside pubescent throughout

... 3.2. B. ornata

5b. Leaves ± deltoid, 7-13 x 5-13 cm,
cleft 1/3 way down, underside

pubescent along the nerves

... 3.1. B. ornata var. kerrii

3b. Leaf lobes obtuse or rounded:

5a. Calyx tube ± 1.2 cm long

... 1.1. B. gianica ssp. gianica

5b. Calyx tube 1.5-2.5 cm long

... 1.2. B. gianica ssp. tenuiflora

1b. Trees:

7a. Flowers while leafless; buds pentagonal

with 5 longitudinal ridges; fertile stamens 3

... 4. B. purpurea

7b. Flowers when leafy; buds smooth,

without ridges, fertile stamens 5

... 5. B. variegata


1861; Baker in Hook. f., Fl. Brit. India 2: 282. 1873; C.E.C. Fischer in


in Miq. Pl. Japn. 265. 1852. ssp. gianica

Large, cirsoid-pubescent climbers; bark dark or reddish brown; young

branches and inflorescence covered with coppery hairs; branchlets slender,

with conspicuous tendrils. Leaves cordate, deeply cleft below the middle with

obtuse-subacute lobes, 2.5-7.5 x 3-7 cm. Flowers white, in copiously dense,

terminal corymbs; bracteoles setaceous, persistent; pedicels slender,

erecto-patent, 1.2-2.5 cm long; calyx lobes 2-valved, reflexed, thinly silky,
limb 5-7 mm long; petals 0.7-1.5 cm long, clawed, glabrous with undulate margins; fertile stamens 3. Pods thin, glossy, 1.5-20 x 4-5 cm; 10-12-seeded.

_**Fl. & Fr.:** October-March._

Lungleh, Holio Hill, 1100 m, Gage 100 (CAL).


Large, scandent shrubs; tendrils simple or forked; leaves 5-8 x 5-7 (-8) cm, sometimes broader than long, suborbicular-truncate, or subcordate at base, cleft up to 1/5-1/4, glabrate above and scattered pubescent along nerves beneath; lobes obtuse at apex, basal nerves 7-9; petioles 2-3 cm long. Flowers white, in lateral and terminal, rusty tomentose corymbs; bracts subulate; bracteoles filiform; pedicels 2.5-5 cm long; calyx lobes lanceolate, limbs 0.7-1 cm long; petals erose with scattered hairs outside, 1.2-1.5 cm long. Pods oblong, 20-25 x 3-5 cm, glabrous, 15-20-seeded; seeds flat.

_**Fl. & Fr.:** August-January._

Tuipang, 1300 m, Parry, 459 (fide C.E.C. Fischer, l.c.); Lungleh, 1000 m, Wenger 6 (CAL); Satsuk, Deb 30836; Kawnpui, K.P. Singh 96999; Zawbawk, K.P. Singh 96720.


Cirrhose lianas with deeply fluted stems; branchlets bright rusty, silky pubescent; tendril apices bifid. Leaves cordate-suborbicular, ovate or lanceolate, 7-15 x 4-13 cm, base subcordate-truncate, lobed, 1/4-1/3 way down; lobes divergent, subacute- acuminate at apex, coriaceous, glabrous; 7-9-nerved at base; petioles 5-8 cm long, swollen at both ends. Flowers 1-1.5 cm across, yellowish-red, in 5-12 cm long, corymbose panicles; panicle branches densely covered with ferruginous silky hairs; bracts ovate-lanceolate, caducous; calyx tube subcylindrical, limb irregularly split; petals obovate-oblanceolate, densely silky outside, reddish brown, pubescent
inside; stamens 3, fertile. Pods shining, reddish-brown, flat, oblong-lanceolate, 12-20 x 3.5-5 cm, often slightly sinuate, 3-7-seeded; seeds ca 2 x 1.5 mm, brown.

Fl. & Fr.: June-December.

Scarce, in the primary forests. Sairep to Tawipui, Dutta 33650 (CAL); Sairep, K.P. Singh 96717. Endemic to North-eastern region.


Large, cirrhose, scendent shrubs, climbing over tall trees; branches, petioles, pedicels and calyx densely ferrugine-tomentose. Leaves coriace, 7.5-15 x 5-13 cm, deeply lobed up to 1/3 way down; sinus deltoid; lobes 9-11-nerved, acute or shortly acuminate at tip, pubescent along the nerves beneath, base cordate-subtruncate, petioles 4-9 cm long. Corymbs dense, terminal, subsessile; bracts linear, acuminate, persistent; flowers white; calyx tube 5-8 mm long, slender, cylindrical; limb irregularly split, reflexed; petals broadly spatulate or suborbicular-ovate, 1.2-2 cm long; margins crisped, densely silky outside; fertile stamens 3; ovary densely silky, shortly stipitate.

Fl. & Fr.: January-May.

15 miles S.E. of Lungleh, Gage 136 (CAL).


Cirrhose, scendent shrubs; branches, inflorescence and floral parts densely pubescent or ferrugino-tomentose. Leaves broadly ovate, 20 x 19-21.5 cm, lobed up to 1/2 way down; lobes cordate at base, subacute at apex, glabrous above, pubescent below. Racemes compound, corymbose, axillary and terminal, ferruginous pubescent; bracts and bracteoles
subulate; flowers whitish; calyx 3-lobed; petals 5, obovate, obtuse, densely ferrugine-pubescent outside; ovary densely pubescent; stigma capitate.

Fl.: March-April.

Mizo Hills, Dutta 33793 (CAL). Endemic to Mizoram.


Small-medium sized, erect trees, 2-7 m tall; bark ash-dark brown, lenticellate; branchlets moderately stout, glabrescent. Leaves shallowly cordate, 7-15 x 6-13 cm; lobes obtuse-subacute at apex, reaching 1/3-1/2 way down, glaucous above, minutely puberulous on the nerves beneath, 9-11-nerved at base; petioles 3-3.5 cm long, swollen at both ends, Racemes corymbose or paniculate, tomentose; bracts and bracteoles minute, deltoid, tomentose; flowers rose-purple; calyx 2-2.5 cm long, tomentose; limbs spathaceous, splitting into 2 segments; petals oblanceolate, long clawed, reddish; stamens 3, fertile. Pods oblanceolate-subfalcate, 15-25 x 1.5-2 cm, flat, greenish-purple, pubescent along sutures, 12-15-seeded; seeds flattened, smooth, roundish, dark brown.

Fl. & Fr.: September-April.

Common, on road side in mixed forests; also cultivated. Changsai, Prazer s.loc. s.num. (CAL); Aizawl, 1200 m, Parry 231 (fide C.E.C. Fischer, l.c.); Selengkawn, Parry 231 A (fide C.E.C. Fischer, l.c.); Sonai to Sakachin Leslie 88(CAL); Kolasib, D.K. Singh 93128; Darzo, K.P. Singh 94024; Kawlhukh-Hhiapui, K.P. Singh 94329; Hnathial, Mao 107049.


Large, scandent shrubs with zig-zag, flat stems and terete branches; tendrils few, weak, usually one to each twig. Leaves broadly ovate, 4-10
x 4-7.5 cm, base cordate, deeply lobed in young plants or coppice shoots in only slightly notched in old plants, glabrous; basal nerves 5-7; petioles 1-4 cm long. Racemes cylindrical, 5-15 cm long, in axillary and terminal panicles; bracts minute, linear-subulate; flowers very small, white; calyx campanulate, 5-cleft; teeth deltoid; petals obovate-oblongate, clawed, puberulous; fertile stamens 3. Pods flat, obliquely oblong, glabrous, thin, 2.5-4 x 1.5-2.3 cm, indehiscent, narrowly winged along the upper suture, 1-(2)-seeded.

Fl. & Fr.: May-February.

Common, along the roadside forests. Lushai hills, Changsai, Prazer s.n. (CAL); Tipaimukh, Kanjilal 4756; Aizawl-Lunglei road, G.K. Deka 37766.


Small-medium, deciduous trees, 5-10 m tall; bark dark grey-brownish, more or less rough; young branches tomentose. Leaves broadly ovate-suborbicular, 5-15 x 5-12.5 cm, deeply cordate at base, lobed to 1/4-1/3 way down; lobes obtuse or rounded at apex, glabrous and dull green above, glaucous and puberulous along the nerves beneath; 9-15-nerved at base; petioles 2-3.5 cm long. Racemes corymbose, lateral or terminal, grey pubescent; bracts and bracteoles minute, deltoid; flowers white, pink or purple, large, up to 8 cm across; calyx tube grey, pubescent, 2-2.6 cm long; limb ovate-cordate, spathaceous, 5-toothed; petals variegated, oblong or obovate, 4-5 cm long, clawed; stamens 5, fertile. Pods dark brown, flat, subfalcate, 15-30 x 1.5-2.5 cm, lignose, glabrous, 10-15-seeded.

Fl. & Fr.: February-September.

Rather common in mixed forests. Chinchip, 1300 m, Parry 119 (side C.E.C. Fischer, l.c.).

3. CAESALPINIA L.

1a. Trees or erect shrubs; pods flat, not winged

3. C. pulcherrima

1b. Scandent or straggling shrubs; pods winged on upper suture
2a. Leaflets 3-5 pairs, 4-10 cm long; pods 1-seeded ...... *C. cucullata*

2b. Leaflets 5-11 pairs, 1-2.8 cm long; pods more than 1-seeded:

3a. Leaflets 6-11 pairs, glabrous ...... *C. enneaphylla*

3b. Leaflets 5-7 pairs, tomentose ...... *C. hypnemicarpa*


Large straggling-scrambling shrubs with glabrous prickly branches. Leaves prickly, bipinnate; rachis 15-35 cm long, armed with hooked prickles; extipulate; pinnae 10-20 cm long; leaflets 3-5 pairs, subopposite, ovate-lanceolate, oblanceolate or elliptic-obovate, 4-10 x 2.5-6 cm, base rounded or cuneate, minutely acuminate at apex, glabrous, dark green above, glaucous beneath; petiolules 2-3 mm long. Racemes simple or forked, terminal and axillary, 12-18 cm long; flowers bright yellow, 1.5-2.5 cm across; calyx deeply divided, lowest lobe hooded; petals streaked with red, upper deeply 2-lobed; anthers red. Pods obliquely oblong, 7-10 x 2.5-3 cm, reddish brown, with papery wings, 1-seeded.

*Fl. & Fr.*: October-June.

Common along the roadside forests. Aizawl, 1000 m, *Parry 400* (*ide C.E.C. Fischer, i.e.*); Haanrang, 2220 m, 4 miles from Lunglei, *Deb 31396*; Saiha to Bualpui, *Dutta 33844* (CAL).


Scandent, glabrous shrubs with sharp hooked prickles. Leaf rachis 20-30 cm long, prickly; stipules scale-like, appressed; pinnae 16-20, stalked, 5-7.5 cm long; leaflets opposite, 6-11 pairs, oblong or obovate, 1.5-2 x 0.5-1 cm, unequal at base, obtuse at apex, glabrous, membranous; petiolules 1 mm long. Racemes copiously panicked, up to 30 cm long, pubescent when
young; flowers bright yellow, smaller, up to 1.2 cm across; calyx greenish-yellow, glabrous. Pods 7-15 x 1.5-4 cm, glossy, winged, 3-6-seeded.

Fl. & Fr.: September-February.

Aizawl, 900 m, G.K. Deka s.n.; Sairang, 2200 m, Deb 30576; Near Tuipui-Darzoo road, K.P. Singh 94017.


Scandent shrubs; branchlets glossy, laxly pubescent or glabrous with recurved prickles. Leaf rachis 20-40 cm long, short tomentose; stipules scale-like, appressed; pinnae 6-10, 5-8 cm long, tomentose; leaflets 5-7 pairs, opposite or alternate, oblong-obovate, 1-2.8 x 0.5-1.6 cm, base unequally cuneate, emarginate at apex, margins smooth or curved, pubescent; petiolules ca 1 mm long. Racemes axillary and terminal, 20-40 cm long, panicled, pubescent; flowers bright yellow; lowest sepal deeply cucullate; petals spreading, connateous, clawed with hairy margins. Pods thin, indehiscent, 6-15 x 2-4 cm, longitudinally winged, dull-shining, 3-6-seeded.

Fl. & Fr.: April-November.

Dutto to Leite, Dutta 34080 (CAL).


Glabrous shrubs or small trees, up to 5 m tall; branchlets glossy, unarmed or with a few straight prickles. Leaf rachis 15-30 cm long; stipules subulate, caducous; pinnae 6-9 pairs; leaflets 8-12 pairs, sessile, opposite, obovate-oblong, 1.3-2 x 0.8-1 cm, base obliquely rounded, emarginate, mucronate at apex, glabrous. Racemes quite broad, terminal and axillary; pedicels articulate near top; flowers yellowish orange, up to 4 cm across; calyx glabrous, lowest sepal cucullate; petals 4, subequal,
round, crisped, distinctly clawed. Pods nearly oblong, straight, beaked, flattened, 5-8 x 1-2 cm, 8-10-seeded; seeds ± rectangular, blackish.

*Fl. & Fr.*: April-December.

Native of South America, it is usually cultivated as an ornamental tree. Kolasib, 700 m, *D.K. Singh* 93116.

4. **CASSIA L.**

1a. Trees or shrubs; petioles and leaf rachis glandular:

2a. Shrubs; flowers in dense spicate heads;
   pods membranous, winged 
   
   ...1. *C. akata*

2b. Trees; flowers in lax or corymbose racemes;
   pods not winged:

3a. Pods ligulate, flat, not woody  
   ...8. *C. troinieri*

3b. Pods terete, cylindrical, woody:

4a. Leaflets 3-8 pairs; flowers yellow in lax racemes 
   ...2. *C. fistula*

4b. Leaflets 6-12 pairs; flowers pink in 
   corymbose racemes 
   ...5. *C. javanica var. indochinensis*

1b. Herbs or shrubs; petioles and leaf rachis glandular:

5a. Leaflets 25-50 pairs, about 1 mm wide;
   pods dehiscent  
   ...4. *C. mimosoides*

5b. Leaflets less than 10 pairs, 1-3.5 cm wide;
   pods indehiscent or subindehiscent:

6a. Leaves with a gland near base of the petiole only:

7a. Petioles grooved, leaflets 4-9 pairs;
   pods subterete  
   ...7. *C. sophera*

7b. Petioles grooved; leaflets 3-5 pairs;
   pods compressed  
   ...6. *C. occidentalis*

6b. Leaves with glands between the leaflets

8a. Flowers in pairs on axillary peduncles; 
   leaflets 2-3 pairs, obovate, oblong or 
   subacute at apex; pods subtetragonous  
   ...9. *C. tora*

8b. Flowers in pedunculated racemes; leaflets 
   3-5 pairs, lanceolate, acuminate at apex; 
   pods cylindric, turgid  
   ...3. *C. floribunda*

Sublignose shrubs, 1-5 m tall; branches thick, finely tomentose; bark greenish or greenish brown. Leaf rachis 25-60 cm long; leaflets 8-12 pairs, larger towards tip, oblong, obovate, 5-15 x 2.5-6 cm, base unequal, mucronate at apex, retuse or rounded, glabrous on both surfaces; lateral nerves 12-15 pairs, petiolules 2-4 mm long; stipules rigid, deltoid, acuminate, base suriedul. Racemes spiciform, 15-30 cm long, tomentose; bracts obliquely obovate, caducous; flowers yellow, 2.5-4 cm across. Pods linear, compressed, membranous, 12-15 x 1.5-2.3 cm with crenulate wing on both sides, glabrous, 50 or more seeded; seeds rhombic, flat, ca 10 x 8 mm.

(*Fl. & Fr.*: August-March.

Native of South America; now common in waste, open places. Sialsuk, Deb 30689; Darlak, Deb 3437 (CAL).

*Uses*: Paste of leaves is used for ringworms.


Medium, erect, glabrous trees, 10-15 m tall; branchlets adpressed pubescent; bark grey, smooth with horizontal wrinkles. Leaf rachis 30-50 cm long, puberulous; leaflets 3-8 pairs, opposite, ovate, elliptic-oblong, 5-15 x 3-7.5 cm, base cuneate or rounded, acute-short acuminate at apex; glabrous, but greyish pubescent beneath at first; petiolules 4.5 mm long; stipules minute, pubescent, deciduous. Racemes axillary, drooping, 20-60 cm long, pubescent when young, bracts and bracteoles subulate, caducous; flowers yellow, 3.5-5 cm across; calyx oblong, obtuse, caducous; petals obovate, obtuse. Pods terete, 30-60 x 2.2-5 cm, indehiscent, glossy, brownish-black, 40-100-seeded.

*Fl. & Fr.*: April-January.
Cultivated as a decorative tree along the road side; Hnathial, 1000 m, *Parry 60* (type U.E.C. Fischer, l.c.); Kolasi, 1000 m, *D.K. Singh 93117*; Thilikang, *K.P. Singh 96658*.


Herbs or shrubs, 1-3 m, with glabrous branches. Leaf rachis 10-18 cm long, with linear gland between all except upper most pair of leaflets; leaflets 3-5 pairs, ovate-elliptic or lanceolate, 3.5-9 x 1-3.5 cm, rounded at base, cuspulate-acuminate at apex, glabrous, under surface pale, lateral nerves 12-15 pairs; petiolules ca 2 mm long: stipules caducous. Racemes corymbose, 4-8.5 cm long; bracts linear, acuminate, caducous; flowers yellow, 2-3 cm across; calyx lobes unequal, oblong; petals broadly obovate. Pods linear-cylindric, 6-8 x 1.1-1.5 cm, transversely septate, turgid, stipitate at base, 40-55-seeded.

*Fl. & Fr.:* January-December.

Aizawl protected forest, *Deb 30541*; Lungleh, *Dutta 33448*; Champhai, *Dutta 92427*.


Small-medium trees, up to 18 m tall, with pubescent shoots; bark dark brown-grey. Leaf rachis 20-25 cm long, pubescent or glabrescent; stipules crescent-shaped, deciduous, leaflets 6-12 pairs, oblong or oblong-lanceolate, 4-7 x 2-2.5 cm, acute oblique at base, bluntly acuminate at apex, glabrous above, minutely pubescent beneath; lateral nerves 12-15 pairs; petiolules 2-3 mm long. Racemes short corymbose, up to 15 cm long, arising from old nodes; bracts silky, lanceolate, persistent; bracteoles minute, pubescent; flowers pink, up to 6 cm across; calyx red, lobes pubescent; petals oblong-obovate, acute. Pods 7.5-45 cm long, distinctly transversely ribbed.

*Fl. & Fr.:* April-December.


Small, diffuse or erect, suffrutescent undershrubs with branches finely tomentose; stems 0.3-1.2 m. Leaf rachis 4-10 cm long, slender, with a sessile discoid gland near the lowest leaflets; petioles 2-3 mm long; stipules large, linear subulate with a broad base, persistent; leaflets 25-50 pairs, overlapping, subfalcate-oblong, truncate, 3-8 x 0.8-1.2 mm, acute-obliquely mucronate at apex, membranous, glabrous, rigidly coriaceous, sessile. Racemes axillary, 30-50 cm long; bracts 1 pair, stipulaceous; bracteoles 2, minute; flowers solitary or in pairs, yellow; sepals lanceolate-ovate, acuminate, finely pilose externally; petals elliptic-ovibulbar. Pods strap-shaped, flat, 1.5-4.5 x 0.25-0.45 cm, rostrate at apex, covered with fine bristles, dehiscent; seeds compressed, obliquely oblong.

*Fl. & Fr.:* October-November.

Zote, 1700 m, *D.K. Singh* 94546; on way to Hlipui from Kawlbkuth, 1500 m, *D.K. Singh* 94384.


*Fig. 107.*

Foetid, subligneous herbs or undershrubs, 0.5-2.5 m high; branches pubescent. Leaf rachis 12-20 cm long, channelled; petioles 3-6 cm long; stipules obliquely cordate, acuminate, caducous; leaflets 3-5 pairs, ovate-oblong, 3.5-10 x 0.8-3 cm, rounded at base, acute-acuminate at apex, ciliate at margins, glabrous above, minutely glandular pubescent beneath; lateral nerves 8-10 pairs; petiolules ca 1-2 mm long. Racemes corymbose, axillary or terminal, often forming more or less leafy panicles; bracts thin, ovate-acuminate, caducous; flowers yellow, 1-1.5 cm across; sepals obtuse, glabrous; petals obovate-oblong. Pods subfalcate, compressed, 7-12.5 x 0.6-1 cm, 20-35-seeded.

*Fl. & Fr.:* May-December.

Fig. 107: Cassia occidentalis L.

Annual undershrubs, 1-3 m tall, with young parts pubescent. Leaf rachis 10-25 cm long, grooved, having a conical gland at base; petioles 3-4 cm long; leaflets 4-9 (-12) pairs, ovate-narrow lanceolate or oblong-lanceolate, 2.8-7 x 0.6-1.5 cm, unequal at base, acute at apex, glaucous beneath. Racemes corymbose, axillary and terminal, 4-10-flowered, often panicked at the end of branches, bracts green, small, ovate, acute, caducous; flowers yellow, 2.5-3 cm across; calyx lobes elliptic-ovate, pubescent outside; petals oblong-obovate. Pods subterete, 6-12 x 0.5-1 cm, straight or curved, turgid, with more or less thickened sutures, septate, 15-30-seeded; seeds ovate, 4-5 x 3 mm, greyish.

*Fl. & Fr.*: July-December.

Reported on the basis of C.E.C. Fischer (*l.c.*).


Small trees, with slender, finely tomentose branches. Leaf rachis 15-25 cm long; petioles 3-5 cm long; stipules foliaceous, persistent; leaflets 10-18 pairs, oblong, 1.8-4 x 0.5-1 cm, base rounded, obtuse, mucronate at apex, membranous, finely tomentose beneath; lateral nerves 10-12 pairs; petiolules 1 mm long. Racemes corymbose, axillary, panicked; flowers yellow; sepals obtuse, pubescent; petals slightly veined. Pods ligulate, flat, glossy, 11-15 x 1.2-1.5 cm, transversely ribbed, 12-20-seeded.

*Fl. & Fr.*: May-October.

Zawhawk, 1000 m, *Parry* 389 (*fide* C.E.C. Fischer, *l.c.*); Near fort Lungleh, *Gage* 226 (CAL); Hauruang, 2220 m, *Deb* 31372; Lawngtulai forest camp, *D.K. Singh*, 92847.
Fig. 108: Cassia timoriensis DC.

Annual, foetid herbs or undershrubs, up to 1.2 m high, with young parts pubescent. Leaf rachis 2-6 cm long, puberulous, grooved, with 2 subulate glands between 2 lower pairs of leaflets; petioles 1.5-3 cm long; stipules linear-subulate, caducous; leaflets 2-3 pairs, ovate-elliptic or oblong-obovate, 2.5-10 x 0.6-3 cm, rounded or cuneate at base, acute-acuminate at apex, glabrescent above, pubescent beneath; lateral nerves 6-9 pairs; petiolules ca 1 mm long. Flowers yellow, 2-3 cm across, borne in pairs in leaf axils; calyx segments elliptic-ovate, obtuse, glabrate; petals oblong-obovate, conspicuously veined. Pods slender, subtetragonous, 12-20 x 0.4-0.5 cm, 20-30-seeded; seeds rhomboidal, ca 4 mm.

*Fl. & Fr.:* January-December.

Common, in open places inside forests and along the road side. Aizawl, Leslie 374 (CAL); Aizawl, Deb 30651; Upper Thonzawl, K.P. Singh 93919; Kawlkhulhu-Hliaupui road, K.P. Singh 94360; Keifang, M. Sawmliana 99256; Hnathial, 750 m, Mao 107055.

5. **DELONIX** Rafin.


Large, deciduous trees with spreading crown, 7-15 m tall; bark greyish to dark brown, more or less smooth. Leaves bipinnate, 20-75 cm long; pinnae 5-12 pairs; leaflets 15-20 pairs, caducous, oblong, 5-10 x 2-3 mm, base obliquely rounded, obtuse to subacute at apex, adpressed pubescent or glabrescent beneath; ± sessile. Racemes corymbose, 15-30 cm long, 8-12-flowered; flowers red, 5-9 cm across; calyx lobes 5, unequal, valvate, green externally, red internally; petals shortly clawed, posterior one white or variegated. Pods large, lignose, laterally compressed, 20-70 x 5 cm, transversely many-seeded; seeds 20-40, oblong, ca 2 x 0.7 cm, mottled.

*Fl. & Fr.:* March-October.

Usually cultivated as ornamental tree. Kolasib 700 m, D.K. Singh 93118.
Fig. 109: Cassia tora L.
6. GLEDITSIA L.


Large shrubs or trees, 10-30 m tall; trunks and branches with simple or branched thorns; branchlets terete or grooved, glabrous or pubescent-tomentose; bark prominently lenticellate. Leaves alternate or fascicled, up to 15 cm long, pinnate; lower pinnae often reduced to a leaflet; rachis grooved, tomentose; leaflets 30 or more, alternate-subopposite, oblong-falcate, 2.5-3.5 x 0.5-1 cm, base oblique, obtuse at apex, serrulate-crenate along margins, coriaceous-membranous; stipules minute, caducous. Racemes congested, up to 20 cm long, axillary, from the scars of fallen leaves, few-many-flowered; bracts minute; pedicels up to 4 mm long, adpressed pubescent. Flowers small, greenish; calyx campanulate, up to 3 mm long, 3-5-lobed; lobes oblong-lanceolate, acute, tomentose; petals 5, up to 3 mm long, oblong-ob lanceolate, obtuse, tomentose. Pods dark brown, oblong, falcate, 4-4.5 x 3-4.5 cm, shortly stipitate, flat, leathery, indehiscent, 1-many-seeded; seeds compressed, oblong-orbicular.

**Fl & Fr:** February-April (At irregular intervals).

Considerably rare, in tropical forests up to 300 m. Sairep-Tawipui, *Dutta* 33617; Sialsuk, *Dutta* 30779; Fnathial K.P. *Singh* 94041; Dampui, 1200 m, *M. Sawmianana s.num* (CAL). Endemic to North eastern India.

**Uses:** Fruits are eaten by barking deer.

**Note:** Based on their collections, Deb & Dutta (*i.e.* have reported *G. fera* (Lour.) Merr. and *G. macracantha* Desf. from Mizoram. However, as these specimens manifestly compare with that of *G. assamica* Bor, both the species have been treated here under the latter.

7. MANILtoa Scheff.

Large, evergreen trees, up to 15 m tall, with a compact, oval crown; stems sometimes buttressed towards base; bark grey, fissured; young shoots densely lenticellate. Leaves paripinnate; leaf rachis 5-13 cm long, puberulous; leaflets 2-3 pairs, oblique-oblong, obovate or lanceolate, 3-10 x 1-3.5 cm, base obliquely cuneate, acute-subobtuse at apex, subcoriaceous, glabrous. Corymb axillary, rusty pubescent, sessile, floriferous to the base; bracts imbricating in buds, deciduous; flowers white, 1-2 cm across; calyx tube very short, 4-lobed; lobes white, obovate-oblong, reflexed; petals 5, linear-oblong, clawed. Pods falcate, oblong, 4-7 x 2-3.5 cm, beaked, lignose, rugose with lenticular dots, 1-seeded.

Fl. & Fr.: March-September.

Reported on the basis of C.E.C. Fischer (l.c.).

8. SARACA L.


Umbrageous, less branched, medium sized, handsome trees; bark almost black, lenticellate. Leaves paripinnate, sessile-subsessile; rachis 10-25 cm long, glabrous; stipules intrapetiolar, ovate-oblong, scarious, obtuse, ciliate; leaflets 6-12 pairs, oblong or oblong lanceolate, 7-22 x 3-8 cm, base slightly unequal to rounded, acute or obtuse at apex, subcoriaceous, glabrous; petiolules up to 1 cm long; lateral nerves 9-12 pairs. Flowers fragrant, orange-scarlet red, 2-3 cm long, in sessile, corymbose, axillary panicles; corymbs 7-10 cm broad; bracteoles ascending, oblong-spathulate; sepals 4, oblong obovate, subpetaloid; tube elongate; petals absent. Pods oblong, 10-25 x 3.5-5 cm, compressed, glabrous, coriaceous, 4-8-seeded; seeds ellipsoid-oblong, ca. 3 cm long.

Fl. & Fr.: April-October.

S.nam. & s.loc., Parry (CAL); between Ridge Camp and Lungsin, 700-800 m, Gage 213 (CAL); Kolam-Bhairavi Road, ca. 12 km, D.K. Singh 93201; Tipaimukh area, K.P. Singh 97096.
Fig. 110: Saraca asoca (Roxb.) de Wilde
Uses: Leaves used for preparing hot beverage like tea. The stem bark is boiled and the water is taken for easy delivery and diuretic.

9. TAMARINDUS L.


Large, evergreen, unarmed trees, up to 20 m tall, bark dark grey, shallowly fissured. Leaves abruptly pinnate, 5-15 cm long; stipules linear-lanceolate, caducous; leaflets opposite, 12-20 pairs, oblong, or ovate-oblong, 0.6-1.8 x 0.4-0.6 cm, base obliquely cuneate or rounded, notched or mucronate at apex, glabrous. Racemes lax, 10-15-flowered, terminal, up to 10 cm long; bracts papillose, caducous; flowers yellow or creamy, with reddish tinge; calyx tube tubinate, segments lanceolate, greenish white; petals yellow streaked, red, margins fringed. Pods indehiscent, more or less laterally compressed, oblong, 7-15 x 2.5 cm, 3-10-seeded; seeds ca 2 x 1 cm, compressed.

Fl. & Fr.: April December.

Usually planted, not very common. Sairang, 600 m, G.K. Deka 23233; Kolasib, 700 m, D.K. Singh 93136

Uses: Infusion of pulp is taken against diarrhoea. The kernel is effectively used in snake-bite, centipede-bite, etc.

MIMOSACEAE

(D.K. Singh)

1a. Stems 10 or fewer:

2a. Flowers in elongated spikes

2b. Flowers in heads or racemes:

3a. Prickly, decumbent, subshrubby herbs; pods separating into 1-seeded segment

3b. Unarmed trees or shrubs; pods otherwise:

... 5. Enadia

... 7. Mimosa
4a. Medium sized trees; heads solitary on
dropping long peduncles; stamens
monadelphous; flowers dull white or yellow...8. Parkia

4b. Small trees; heads 1-2 together on short
peduncles; stamens free; flowers white...6. Leucaena

1b. Stamens indefinite or more than 10:

5a. Stamens free; armed trees or shrubs...1. Acacia

5b. Stamens united into a tube at base;
unarmed or weakly spinulose trees

6a. Trees with weak stipular spines;
suture of pods thickened...4. Callitandra

6b. Trees without spines; suture of pods not thickened:

7a. Pods thin, straight...2. Athizia

7b. Pods subwoody, crenate or twisted...3. Archidendron

1. ACACIA Mill.

1a. Erect shrubs to medium trees...2. A. farnesiana

1b. Scantily or climbing shrubs:

2a. Stem fluted; pinnae less than 10 pairs...1. A. caesia var. subnuda

2b. Stem terete; pinnae more than 10 pairs:

3a. Flower heads yellow; branchlets pruinose...5. A. pruinowes

3b. Flower heads white or creamy white;
branchlets epruinose but puberulous:

4a. Gland at or above the middle of petiole;
leaflets 6-10 mm long; flowers sessile...3. A. megaladerna

4b. Gland below the middle of the petiole;
leaflets 3-6 mm long; flowers pedicelled...4. A. pennata

1. Acacia caesia (L.) Willd., Sp. Pl. 4: 1090. 1806. var. subnuda
ex Benth. in Hook., London J. Bot. 1: 514. 1842; C.B.C. Fischer in Rec.
(Grah. ex Benth.): Baker in Hook. f., Fl. Brit. India 2: 297. 1878. Acacia
insitia (L.) Willd. var. caesia (L.) Wight & Arn. ex Baker in Hook. f., Fl.

Large, prickly scandent shrubs with fluted stems; prickles stout, hooked; young parts grey-brown, pubescent. Rachis 10-15 cm long with a flat topped basal gland and another smaller one between uppermost pairs of pinnae; pinnae 6-9 pairs, 5-8 cm long; leaflets 16-25 pairs, oblique or oblong, 5-10 x 2-4 mm, base truncate or rounded; sharply acute. Heads 1-2 together in terminal panicles, 40-50-flowered; bracts up to 0.6 cm long, lanceolate, acute acuminate; bracteoles oblong, more or less glabrous; flowers white. Pods unequally oblong, 10-18 x 1.3-3 cm, dark brown.

*Fl. & Fr.:* September-April.

Ghatar moikh hills, Prazer, s.n.(CAL); Lungleh, 1000 m, Gage 79 (CAL); Sairang road, G.K. Deka 2346; Lungleh, Duna 33447 (CAL).


Small, medium thorny trees, up to 7 m tall, and with flexuous branches; bark pale brown, lenticellate; spines stipular, straight, up to 3 cm long; young shoots brown tomentose. Leaf rachis 2.6 cm long, brown, tomentose with a minute circular petiolar gland; pinnae 4-6 pairs, up to 3.5 cm long; leaflets 10-20 pairs, sessile, rigid, oblong, 0.25-0.5 cm long, base obliquely truncate, acute-obtuse at apex, glabrescent. Heads 0.3-0.8 cm across, pedunculate, axillary; peduncles up to 3 cm long, fascicled on minute outgrowths with a ring of minute, dilute bracts, flowers yellow, fragrant. Pods subcylindrical, 4.8 x 1.2 cm, curved, brown, horizontally finely striate; seeds hiserial, many.

*Fl. & Fr.:* April-September.

A native of tropical America, usually planted. Rawnpuir, N K. Singh 93030.

Large, prickly, scandent shrubs; prickles few, arranged in 5 rows on young branches. Leaf rachis up to 22 cm long with a large cupular gland and 2-4, smaller interpinnular glands; pinnae 10-20 pairs, 5-8 cm long; leaflets 16-50 pairs, linear-oblong or unequally broad, 6-10 x 0.5-1.5 mm, oblique at base, sharply acute at apex, glabrous, slightly membranous. Heads dull white, up to 1 cm across, 1-4 in terminal, elongated compound panicles. Pods leathery, linear-oblong, strap-shaped, 10-18 x 2-4 cm, reddish brown, 8-14-seeded; seeds oblong.

Fl. & Fr.: July-April.

Helin Hill, N.E. Langleh, 1200 m, Gage 106 (CAL).


Large, scandent bush or lianas, with recurved prickles and pale brown bark. Leaf rachis 15-20 cm long, with large, cup-like gland on petiole near base, and 1-3 smaller glands between the upper pinnae; pinnae 8-16 pairs, 4-10 cm long; leaflets 40-50 pairs, sessile, linear-oblong, 3-6 x 1 mm, base truncate, asymmetric, acute at apex, glabrous on both sides, coriaceous. Flower heads white or creamy white, 0.8-1 cm across, 1-4 together in terminal, tormentose panicles. Pods stalked, oblong, acute or acuminate at apex, 8-18 x 2-3 cm, glabrous, strap-shaped, borders thickened, 5-10 seeded; seeds oblong, dark brown.

Fl. & Fr.: July-February.

At lower elevations in tropical forests. On way to Champhai from Aizawl, Deb 30899; Lawangtalai-Kawkhaw, K.P. Singh 92864; Upper Thenzawl, K.P. Singh 93924; Tuipui-Darzo road, K.P. Singh 94022; Near Sherchhip, K.P. Singh 96603; Dampa, 500-1200 m, Mao 101140.


Large, prickly, scandent shrubs; branches prinose; prickles recurved. Leaf rachis 12-25 cm long with a large gland above base and smaller ones between the upper 2 or 3 pinnae; stipules deciduous; pinnae 6, 5-10 cm
Fig. 111: Acacia pennata (L.) Wild.
long, 8-15 pairs; leaflets 40-60 pairs, sessile, linear-oblong, 5-8 x 1 mm, cuneate-subcuneate or truncate at base, obtuse at apex, glabrous or ciliate at margins, pale beneath. Heads yellow, 0.6-1.2 cm across, in axillary panicles, 20-30-flowered; bracts linear-lanceolate or spathulate, tomentose; calyx campanulate, teeth short, acute, more or less pubescent; corolla lobes lanceolate, puberulous. Pods strap-shaped, contracted at regular intervals, 7-13(18) x 2-3.5 cm, pale brown, 3-8-seeded.

Fl. & Fr.: April-January.

Near Fort Lungleih, 900-1200 m, Gage 121 (CAL); Aizawl 900 m, G.K. Deka 23238.

2. **Albizia Durazzini**

1a. Stipules large, ovate ...

1b. Stipules small or minute, linear:

2a. Leaflets acuminate at apex, (1-)2(-3) pairs ...

2b. Leaflets obtuse at apex, 4-20 pairs:

3a. Flowers in umbels, pedicellated; pods straw-coloured ...

3b. Flowers in panicles, sessile; pods dark reddish or brown in colour:

4a. Leaflets ovate-oblong, 15-20 mm wide, mid rib towards lower side; rachis and calyx glabrous ...

4b. Leaflets obliquely-oblong, 2-10 mm wide, mid rib towards upper side; rachis and calyx pubescent ...

LARGE, handsome trees, 20-25 m tall, with flat, spreading crown; bark dark brown, horizontally wrinkled, lenticellate. Leaf rachis 12.5-30 cm long, with a large gland at base and a few between pinnae, finely tomentose; stipules ovate, 2.5-3 x 1.5-1.8 cm large, obliquely semicordate, acute, persistent; pinnae 5-20 pairs, 5-15 cm long; leaflets subsessile, 20-40 pairs, falcate, or linear-oblong, 5-8 x 1-2 mm, obliquely acute at both ends, membranous, sensitive, finely pubescent and glaucous beneath. Heads 15-25-flowered, in axillary and terminal corymbose or racemose panicles; bracts persistent, stipulate, up to 2.5 cm long, cordate, acute, membranous, pubescent; flowers sessile, yellowish or greenish white; calyx tubular, infundibulate; petals ovate-lanceolate, pubescent outside. Pods indehiscent, 7-16 x 1.8-2.5 cm, light brown, thin glabrous, 4-10-seeded.

Fl. & Fr.: April-December.

Near fort Lungleh, 900-1200 m, Gage 124 (CAL); Vanjoh, Kapley as Zolse, Leslie 294 (CAL); Champhai, 1560 m, Deb 30965; Chummling to Meiboi, Duma 33318; Kolasi, D.K. Singh 93152.


Large, deciduous trees, up to 20 m tall with spreading crown; bark grey-brown, irregularly cracked, branches lenticellate; young shoots and inflorescence pubescent. Leaf rachis 7-15 cm long, glandular at base and near the tip; stipules linear, tomentose, caducous; pinnae 2-5 pairs, 5-20 cm long; leaflets 4-10 pairs, oblong-ovate, 2.5-4 x 1.2-2 cm, base unequal, obtuse-emarginate at apex, adpressed pubescent beneath. Heads umbellate, 15-30-flowered, solitary or 3-4, fascicled in upper leaf axils or short innovations, 5-7 cm across; flowers greenish-white, fragrant; bracts linear, tomentose, caducous; calyx ca. 3 mm, pubescent; teeth minute; petals short, lanceolate. Pods oblong, 10-30 x 3-4.5 cm, yellowish-brown, finely reticulate, alternately depressed on either side over seeds, 2-12-seeded; suture thickened.

Fl. & Fr.: April-October.

Lushai hills, Prozer, s.num. (CAL); Huathial-Lungleh road, K.P. Singh 94189; Zawbawk, K.P. Singh 96733.

Medium-sized, evergreen trees, up to 15 m tall with ovate-elongated crown; branches arachnate; bark grey with horizontal wrinkles and lenticles. Leaf rachis 3-8 cm long with a cupular gland slightly above the middle; pinnae 1(-2) pairs, 2.5-12 cm long, usually with a gland near the tip; leaflets (1-) 2(-3) pairs, elliptic-oblong or ovate-lanceolate, 4-15 x 2-5 cm, base obliquely cuneate-rounded, acuminate-acute at apex, glabrous, glossy dark green above, pale beneath. Heads in subumbellate, corymbose panicles; bracts and bracteoles minute; flowers dull, white-creamy; calyx campanulate, puberulous, teeth minute; petals lanceolate, silky outside. Pods light green, thin, flat, 10-25 x 1.5-2.5 cm, attenuated at both ends, 4-8-seeded.

*Fl. & Fr.*: April-October.

Bindameswar (near Tlabung), K.P. Singh 94293.


Large, deciduous trees, up to 25 m tall with spreading oval crown; bark grey or brownish grey-black, rought; young shoots and inflorescence densely pubescent. Leaf rachis 10-20 cm long with a large gland at base and a few between upper pinnae, finely tomentose; stipules small, deciduous; pinnae 3-5 pairs, 7-15 cm long, puberulous or glabrescent; leaflets 8-20 pairs, sessile, obliquely oblong-obovate, 0.8-2.5 x 0.2-1 cm, obliquely truncate or rounded at base, obtuse at apex, glaucous beneath. Heads 22 12-flowered, up to 3 cm across, solitary or panicked, white or yellowish-white; bracts ovate, acute-acuminate, brown tomentose; flowers sessile, fragrant; calyx small, campanulate, densely pubescent outside; corolla infundibulate, hairy, lobes lanceolate. Pods firm, flexible, 15-20 x 2-3 cm, shortly stipitate, reddish brown, 8-12-seeded; seeds ovoid, compressed, 7-12 x 5-8 mm.
Fl. & Fr.: April-December.

Common in evergreen forests. Hiiapui, 1500 m, D.K. Singh 94336.

Uses: The bark is used as fish poison.


Tall, subdeciduous trees, up to 25 m with branchlets arcuate or drooping; bark yellowish grey, smooth. Leaf rachis glabrous, 25-45 cm long, with a large oblong-oval gland at base; pinnate 2-6 pairs, 12-25 cm long; often with glands between upper 1-2 pairs of leaflets; leaflets 8-20 pairs. sessile, rhomboid-oblong or ovate-oblong, 2.5-6 x 1.5-2.2 cm, base cuneate, obtuse, mucronate at apex, younger ones silvery beneath, adpressed pubescent or glabrous. Heads 1-5 together in large panicles, up to 1.5 cm across; bracts caducous; flowers sessile, dull white; calyx tubular, glabrous outside; petals oblong-lanceolate, pubescent outside. Pods 10-20 x 1.5-2.5 cm, reddish-dark brown, flexible, glabrous, 8-12-seeded.

Fl. & Fr.: June-December.

S. loc., Parry s.n. (CAL); Haurunag, 4 km from Lungleh, 666 m. Deb 31384.

Uses: The bark is used as fish poison. Poultries of leaves is applied to ulcers.


1a. Shoots distinctly angular; 
   pinnate and leaflets more than 4 pairs

   ...1. *A. clypeatra*

1b. Shoots terete or slightly angular; 
   pinnate and leaflets less than 4 pairs:

2a. Usually shrubs, up to 1.5 m tall; flowers 6-12 mm long ...2. *A. glomeriflorum*

2b. Usually trees, 3-8 m tall; flowers 5-6 mm long ...3. *A. monadelphum*

Small-medium trees, 5-15 m tall with more or less horizontal branching; branchlets sharply angulate; bark dark brown or grey with thin, transverse, lenticular lines. Leaves stipulate, bipinnate with 2-12 pairs of pinnae; common rachis 7-20 cm long, puberulous or glabrous with a large gland near base and at each node; leaflets very variable, 5-12 pairs, gradually larger towards tip, ovate, obovate, trapezoid or rhomboid, 2-15 x 1.5 cm, base more or less cuneate or rounded, obtuse or acute at apex, subcoriaceous, ± puberulous. Heads 1-1.5 cm across, in terminal panicles; panicles with densely pubescent, erecto-patent sulcate branches; bracteoles glandular, minute; flowers yellowish or greenish or greenish-white, 0.5-0.6 cm across; calyx campanulate, puberulous, teeth acute; petals puberulous outside. Pods 10-20 x 1.5 cm, spirally twisted, red or yellow outside, sinuate along ventral suture, red within, 8-10-seeded; seeds ellipsoid, 7-10 x 6-9 mm.

Fl. & Fr.: February-December.

Common, in lower hill forests. Thenzawl, 1000 m, Parry 428 (CAL); Chapi, 1300 m, Parry 499 (CAL); Lorrain 27 sloc.; Bunglang, Deb 31444; Saiha-Bualpui, Dutta 33833; Kolasib–Buileng, 750 m, D. K. Singh 93144; South Vanlaiphai, K.P. Singh, 96863; Champhai area, Dutta 88485.

Uses: Leaves used for dyeing cotton black.
Fig. 112: Archidendron clypearia (Jack.) Nielsen

Small shrubs, or rarely small trees, 0.6-1.5 m high; young shoots puberulous; branchlets terete or slightly angulate. Leaves abruptly bipinnate with a single pair of pinnae; pinnae unijugate, 2.5-4 cm long; leaflets 2-3 pairs, obliquely oblong or rhomboid-lanceolate, 2.5-8 x 1-3.5 cm, chartaceous, acuminate at apex, more or less glabrous above, glaucous beneath, densely pubescent on midrib and nerves. Heads solitary or clustered into axillary racemes and terminal panicles; flowers greenish-white, 0.6-1.25 cm long; calyx pubescent; corolla deeply lobed, pubescent. Pods spirally twisted, 15-25 x 1.5-2.5 cm, reddish brown, 5-10-seeded; seeds ellipsoid-oblong, 10-13 x 10 mm, dark brown-blackish, crumpled at surface.

Fl. & Fr.: March-January.

Sialsuk, Deb 30769; North Vanlaihpi, D.K. Singh 99219.


Small-medium trees, 3-8 m tall; branchlets rounded or terete, brown pubescent; bark grey-pale brown, warty with lenticels; young parts and inflorescence brown pubescent. Leaf rachis 2.5-10 cm long, stout with a raised gland below the lowest pair of pinnae and usually one at the base of each pair of pinnae and leaflets; pinnae 1-2 pairs, 5-12 cm long; leaflets 1-3 pairs on lower pinnae, up to 4 pairs on terminal pinnae, elliptic, oblong-lanceolate or oblanceolate, 3.5-15 x 2.5 cm, acute-obtuse at base, acute or short acuminate at apex, subcoriaceous, glabrous above. Heads 6-10-flowered, in axillary and terminal panicles; flowers 5-6 mm long, creamy
white. calyx brownish, subcampanulate, pubescent, teeth acute; corolla pubescent outside, deeply cleft. Pods once or twice spirally twisted, 7-15 x 1.2-1.8 cm, dehiscing along ventral suture, slightly pubescent, 6-8-seeded; seeds; black, 0.1-1.3 x 0.6-1 cm.

Fl. & Fr.: February-December.

Lushai hills, Parry s.n.; Tawipui-Thengfal. Dutta 33675.

4. CALLIANDRA Benth.


Small trees, up to 10 m tall with lenticellate branches. Leaves bipinnate; common petiole 2-3 cm long; stipules spinescent; pinnae one pair, 2-6 cm long with a gland between them; leaflets one pair, terminal, oblong-elliptic. lanceolate, 3-6 x 2-2.5 cm, base oblique, acuminate at apex, glabrous, subcoriaceous; lateral nerves 3-10 pairs, petiolules ca 2 mm long with a gland between each pair. Heads globose, 6-8 mm across, on 1 2-2 cm long peduncles; peduncles clustered together on stems or rarely axillary. flowers white or creamy white, sessile, 0.2-0.4 cm across. Pods flat, 8-12 x 2-2.5 cm, 4-9-seeded; seeds compressed.

Fl. & Fr.: January-August.

Not much common. Sairang road, 900 m, G.K. Deka s.n.

5. ENTADA Adams


Gigantic lianas with angled, twisted stems; bark brownish grey or black; branchlets and inflorescence brown tomentose. Leaves bipinnate; rachis
ending into two deciduous tendrils; stipules small, bristle-like; pinnae 2 pairs, 5-12 cm long; leaflets 2-3 pairs, oblong-obovate or obovate-lanceolate, 2.5 x 1.5 cm, base oblique, acute or obtuse, obrate or shortly acuminate at apex, glabrous, dark green shining above, coriaceous. Spikes peduncled, 12-20 cm long, usually in axillary panicles; bracts minute, linear; flowers 0.25-0.3 cm long, greenish to pale yellow or white; calyx campanulate, tomentose outside, teeth 5; petals 5, oblong-lanceolate. Pods oblong-falcate; 20-90 x 7-10 cm; siliques between seeds, lignose, compressed; seeds discoid, 3.5-5 cm across, lenticular, shining brown.

Fl. & Fr.: March-April (next year).

Common, in tropical deciduous and evergreen forests. Helio Hill, Lunglei, 1200 m, Gage 90 (CAL); Satrual, Leslie 147 (CAL).

6. LEUCAENA Benth.


Low, erect shrubs or small trees, without spines; bark brown, warty, more or less striate. Leaves bipinnate; leaf rachis up to 15 cm long with a oblong cupular gland towards base; pinnae 4-8 pairs, 5-8 cm long; leaflets 10-15 pairs, linear-oblong, or obovate, 5-12 x 2-3 mm, base oblique, acute at apex, membranous, glaucous. Heads 1-2 together, dense, short peduncled, axillary, 1.2-1.8 cm across; flowers white; calyx tubular-campanulate, teeth short; petals oblong, valvate, free, pubescent. Pods straight, glabrous, strap-shaped with acute apex, borne on stalks up to 3 cm long, 10-15 x 0.5-1.2 cm, coriaceous, 15-20-seeded; seeds brown, glossy.

Fl. & Fr.: October-April.

Nunswari (near Tlabung), K.P. Singh 94278; Tablabagh, K.P. Singh 94283.

Uses: Fruits eaten raw or as chatni.
7. MIMOSA L.


Decumbent straggling shrubs or prickly subshrubby herbs, 0.3-1.5 m high, bristly hairs of branchlets and petioles deflexed, those on the rachis ascending. Leaves sensitive, bipinnate; pinnae 2-4, digitate, 2.5-9 cm long; rachis 2-3 cm long; stipules linear-lanceolate with bristly ciliate margins; leaflets 12-20 pairs, oblong, 0.3-1.5 x 0.1-0.3 cm, obliquely rounded at base, subobtuse or acute at apex, margin ciliate with bristles, adpressed bristly beneath. Heads 1-4 fascicled, axillary, 1-1.5 cm across; flowers pink or bluish purple. Pods linear-oblong, constricted, 4-12, developing from each head. 1.5-2.5 x 0.3-0.4 cm with weak bristles on sutures, 3-5-seeded; seeds compressed, ovoid, ca 3 mm, brown.

*Fl.* & *Fr.*: May-December.


Uses: Dried leaf is smoked as cigarette to expel tooth worms. Decoction of whole plant is given for kidney trouble.

8. PARKIA R. Br.


Medium-large, unarmed trees, 12-20 m tall; branches spreading, pubescent; bark light grey or whitish brown; branchlets having raised lenticels. Leaves bipinnate; leaf rachis 30-60 cm long, puberulous or glabrous with a solitary gland near base; pinnae 8-30 pairs, opposite, 6-10 cm long; leaflets 40-80 pairs, closely set, linear-ligulate or oblique-oblong, 0.4-0.6 x 0.1-0.3 cm, unequally truncate at base, acute at apex, margins puberulous. Heads turbinate-clavate, 4-6 x 1.5-3 cm, on 30-45 cm long peduncles; bracts spathulate, silky pubescent outside; flowers sessile, dull white or yellow, fragrant, tubular, up to 1.5 cm long; calyx
tubular, ca 10 mm long, 5-cleft, teeth tormentose-glabrous; petals subvalvate. Pods flat, slightly twisted, 25-45 x 2.5-4 cm, dark brown.

Fl. & Fr.: September-May.

Cultivated throughout the state. Kolasib-Bukpui, 800 m, D.K. Singh 93028; Sialuk road in upper Thenzawl area, K.P. Singh 93902.

Uses: Tender fruits are eaten as vegetable.

Cultivated taxa

Schranksia brachycarpa Benth. in Hook., J. London Bot. 2: 130. 1843.
Duhilo (Lushai).

A native of tropical America, cultivated.

Uses: Roots used for curing calculus.


Rosaceae

(K.P. Singh)

1a. Ovary superior; carpels and fruits exposed;

2a. Herbs or small shrubs; carpels with single ovule only:

3a. Leaves pinnately compound, style short ...4. Potentilla
3b. Leaves digitately 5-foliolate; style long, straight ...1. Duchesnea

2b. Prickly shrubs or unarmed trees; carpels with 2 ovules in each:

4a. Trees; calyx deciduous; carpels solitary ...3. Prunus
4b. Prickly shrubs; calyx persistent; carpels more than one ... 8. Rubus

1b. Ovary inferior; carpels and fruits enclosed in the fleshy hypanthium:
FLORA OF MIZORAM

5a. Usually spiny shrubs or climbers;
carpels many; fruits small, dry and free within
the enlarged fleshy receptacle

5b. Gummed trees; carpels 1-5; fruits fleshy and
fused with fleshy enlarged calyx:

6a. Flowers in umbels, fascicles or corymbs; styles 4-5

6b. Flowers in racemes or panicles; styles 2-3:

7a. Panicles white, woolly to glabrous,
not rusty; carpels partially connate;
fruits drupaceous, hard

7b. Panicles rusty tomentose;
carpels wholly connate; fruits baccate

...2. Eriobotrya

1. DUCHESENEA Smith

479. 1807; Hook. f., Fl. Brit. India 2: 343. 1878; Kanjilal et al., Fl. Assam
Potentilla indica (Andrews) Wolf, Synop., der Mitt. Fl. 6: 661. 1904; Dixit
& Panigrahi, Rosaceae India 4: 133. 1988. Vaitheihmu (Lushai). Fig. 113.

Silky prostrate pubescent herbs. Leaves digitately 3-foliolate; leaflets
obovate, 0.8-3.0 x 0.7-1.5 cm, base cuneate, obtuse at apex, crenate at
margins; whitish pilose on both surfaces; petioles 4-7 cm long; petiololes
small; stipules leafy, adnate to petioles. Flowers solitary on axillary
peduncles, 8-10 mm across; calyx persistent; lobes ovate, 3.5 mm long;
petals yellow, obovate. Achene black, small, oblong, 0.8-1.5 cm across,
resting on shiny red conical or subglobose receptacles.

Fl. & Fr.: Throughout the year.

Common, in moist and shady places. Kawnpui-Lungdai, D.K. Singh
93038; Jawbawk, K.P. Singh 94242; Alizawl, M. Sawmiana 95535.

2. ERIOBOTRYA Lindley

et al., Fl. Assam 2: 213. 1938. Nakalchun (Lushai). Fig. 114.
Fig. 113: Duchesnea indica (Andrews) Focks
Fig. 114: Eriobotrya bengalensis Hook. f.
Trees, up to 25 m tall with young parts brown tomentose. Leaves elliptic or lanceolate, 10-18 x 5-7 cm, base cuneate or attenuate, acuminate at apex, coarsely serrate along margins, coriaceous, glabrous above, slightly puberulous along the nerves beneath; lateral nerves 8-15 pairs; petioles 3-5 cm long. Panicles 8-10 cm long, terminal; flowers ca 1 cm across, white, fragrant; calyx densely pubescent, obconic; petals obovate, 4-5 mm long; ovary hairy; styles 2-3. Pomes ovoid, 1.5-2 x ca 1 cm, glabrous.

Fl. & Fr.: September-April.

S. loc., Parry s.n. (CAL); 15 miles S.E. of Langtch, 900-1200 m, Gage 155 (CAL); Theiriat, Deh 31019, 31252 (ASSAM, CAL); Tunchang, K.P. Singh 94500; Mualpheng, M. Saumliana 97177.

3. PHOTINIA Lindl.


Evergreen trees, 12-20 m tall with glabrous branches. Leaves elliptic or oblanceolate, 7-14 x 4-7.5 cm, base cuneate, obliquely acuminate at apex; undulate along margins; lateral nerves 8-15 pairs, petioles erect, 10-20 mm long, channelled, base swollen; stipules subulate. Flowers 5-8 mm across, in terminal corymbose panicles, yellowish-white; bracts tricuspidate, woolly; calyx lobes triangular-ovate; petals orbicular. Drupes subglobose, ca 1 cm in diam., yellow to reddish-brown, turning purplish-brown when ripe.

Fl. & Fr.: February-November.

Phongpui, Parry 532 (fide C.E.C. Fischer, l.c.).

4. POTENTILLA L.

la. Leaves interruptedly imparipinnate
lb. Leaves digitately 3-5-foliate:

2a. Leaflets 15-25 x 10-17 mm, base rounded

... 1. P. germariiana

2b. Leaflets 4-24 x 3-12 mm, base attenuate

... 3. P. surdaica

Rosette herbs with perennial rootstock, whitish, pilose throughout. Leaves 3 5(7) foliolate; upper leaflets obovate elliptic, 1.5 2.5 x 1.1.7 cm, rounded at base, obtuse at apex, serrate or crenate along margins, minor leaflets 4-7 mm long, leaflets lobed but never pinnatisect; petioles 3-12 cm long, pilose. Flowers 3-6 in loose cymes; calyx lobes ovate, pilose; petals obovate, yellow. Achenes ca 1.5 mm across, glabrous.

*Fl. & Fr.: February-May.*

Chumphai. 1500 m, Parry 187 (fide C.E.C. Fischer, l.c.).


Small, prostrate, erect herbs, up to 1 m high; stems, inflorescence, leaf rachis hairy. Leaves interruptedly pinnate, 5-13 cm long; lateral leaflets 4-8 pairs, elliptic or obovate, 0.7-4 x 0.5-2 cm, base rounded, obtuse at apex, serrate along margins, underside silvery white, pubescent; stipules foliaceous, membranous. Flowers yellow, 5-10 mm across, in terminal corymbose panicles; calyx lobes with long spreading hairs; petals obovate, 5-7 mm long, glabrous. Achenes small, smooth on elevated receptacles, ovoid, ca 1 mm.

*Fl. & Fr.: May-September.*

Phoungplui, 2100 m, Parry 570 (fide C.E.C. Fischer, l.c.).

Rosette herbs with spreading, prostrate, hairy stems, up to 50 cm long. Leaves digitately 3-5-foliolate; leaflets obovate, 0.6-2.4 x 0.3-1.2 cm, base cuneate, apex rounded, obously serrate along margins, underside thinly pubescent, ± glabrous above; petioles 2-8 cm long; stipules lanceolate, up to 1.5 cm long, entire or serrate; Flowers 2-5 in terminal cymes, petals yellow; Achenes small, ellipsoid, globose, ca 1 mm, glabrous, wrinkled.

_Fl. & Fr.:_ January-July.

Tuipang, 1200 m, _Parry 465, (fide C.E.C. Fischer, i.e.); North-Vanilaiphai, D.K. Singh 99213.

5. PRUNUS L.

1a. Flowers 1-3, in clusters or fascicles:

2a. Calyx and ovary glabrous  
   ... _P. cerasoides_

2b. Calyx silky tomentose; ovary tomentose  
   ... _P. persica_

1b. Flowers in racemes:

3a. Leaves evergreen, usually entire along margins;  
   racemes leafless at base  
   ... _P. undulata_

3b. Leaves deciduous, serrate along margins;  
   racemes leafy at base  
   ... _P. nipponensis_


Medium sized, deciduous trees, up to 20 m tall. Leaves ovate-lanceolate or elliptic, 5-11 x 3-4 cm, base rounded or cuneate, acuminate at apex, serrate along margins, glabrous on both surfaces; petioles 1-2 cm long, 4-5-glandular; stipules linear-lanceolate. Flowers 1-3 in corymb or fascicles, 2.5-3.5 cm across, surrounded at base by three brown, leafy bracts, fading to white; calyx greenish, glabrous, campanulate; petals obovate, spreading. Drupes ellipsoid, 3-8 x 4-6 mm; stone pitted, yellow, often tinged with red.

_Fl. & Fr.:_ October-June.
Sherkor, 900 m. Parry 103 (fide C.E.C. Fischer, l.c.); North-Varlaiptai, 1500 m. Parry 520 (fide C.E.C. Fischer, l.c.); Aizawl, Deb 30633.


Medium sized, deciduous trees, 15-20 m tall. Leaves simple, oblong-lanceolate, lanceolate, 6-10 x 2-5 cm, base rounded or acute, acuminate at apex, finely serrate along margins, subcoriaceous, glabrous above, glaucous beneath, finely reticulated; petioles 0.5-1.5 cm long. Racemes 7-10 cm long, axillary; flowers white, 7-8 mm across; calyx turbinate, grey-pubescent, ca 4 mm long; petals broadly ovate, ca 3 mm long. Drupes globose, 1.5-2 cm across, fleshy; stone smooths.

Fl.: October-November; Fr.: August-September.

In primary forests. Mualpheng, M. Sawmliana 95573.

Uses: Fruits edible.


shrubs or moderate sized deciduous trees, up to 8 m tall. Leaves narrowly lanceolate to broadly oblanceolate, 8-14 x 3-5 cm, base rounded, acuminate, serrate to serrulate along margins, glabrous at length, puberulous on mid rib beneath; petioles 6-10 mm long, 2-4 glandular near apex; stipules subulate, fimbriate. Flowers pink to white, axillary, solitary or fascicled, 2-2.5 cm across, ± concealed by bud scales; calyx lobes oblong, silky tomentose outside; petals, obovate, pink. Drupes elliptic-ovoid, 3-6 cm long, succulent, velutinous with red tinged; pyrenes elliptic, rugose, irregularly furrowed and pitted, 3 x 2 cm.

Fl. & Fr.: January-June.

Kawnpui, K.P. Singh 97000.
Uses: Fruits are edible.


Fig. 115.

Evergreen shrubs or small trees, 6-14 m tall with slender branches. Leaves simple, alternate, lanceolate, elliptic-lanceolate, 8-14 x 2-4 cm, base cuneate, long acuminate at apex, usually entire to serrate along margins, glabrous above, undersurface paler with minute black glands; lateral nerves 6-8 pairs; pedicels 4-5 mm long. Racemæ solitary or in fascicles of 2-3, axillary, rachis 5-8 cm long, glabrous; flowers scented, creamy-white, 0.7-1 cm across; calyx ca 1 mm long, broadly triangular pubescent; petals elliptic, ca 2 mm long. Drupes ovoid-ellipsoid, 10-18 x 5-10 mm, fleshy, pointed at apex, purplish-black, glabrous; stones smooth.

Fl. & Fr: October-June

Frequent, in primary forests. Keifang, M. Sawmliana 99259; Mualpheng, 500-1300 m, M. Sawmliana 101736.

6. Pyrus L.


Medium sized trees, 5-15 m tall; young parts woolly. Leaves ovate or lanceolate, 3.5-6 x 2.5-3 cm, base rounded or shallowly cordate, acuminate at apex, serrulate along margins, sparsely white pubescent at first, glabrous beneath when mature; pedicels 2-2.5 cm long; stipules subulate, adnate to petiole in lower half. Flowers in axillary or terminal, 3-8-flowered umbels, 1.5-2 cm across; calyx ovate, brownish-tomentose within; petals white, obovate. Pomes solitary or in twos, ellipsoid, 2-3.5 cm long, glabrous, with white specks, depressed at tip, dark brown when ripe.

Fl. & Fr: March-January.

Aizawl, 900 m, Parry 676 (fide C.E.C. Fischer, l.c.); Zotethlang, K.P Singh 92821; Champhai, Deb 38152, 30952.
Fig. 115: *Prounia undulata* Buch.-Ham. *ex* D.Don
Uses: Fruits are edible.

7. **Rosa L.**

1a. Flowers solitary, deep red; styles free

1b. Flowers in corymbose clusters, white; styles united into a column

2a. Prickles scattered; pedicels and inflorescence glandular; styles pubescent

2b. Prickles usually inter stipular; pedicels and inflorescence eglandular; styles glabrous

---


Erect shrubs, up to 2-3 m; branches slender, with a few scattered hooked prickles or sometimes unarmed. Leaflets 3-5, ovate-lanceolate, purplish 3-4.5 x 1.5-3 cm, base cuneate, acuminate at apex, serrate along margins, coriaceous; stipules flat, glandular; petioles with glandular bristles and hooked prickles, glabrous. Flowers solitary deep red ca 5 cm across; pedicels glandular bristly; hypanthia globular, glabrous; sepals ovate, ca 2-4 mm; petals 2.5-3 x 2.5 cm, flat; stamens many; styles many, exerted. Fruits spherical, ca 15 x 14 mm.

*Fl. & Fr.: August-November.*

Commonly cultivated. Bungling Deb 31419; 31420.


Sarmentose, evergreen, climbing shrubs; branches armed with curved prickles. Leaves imparipinnate. 10-15 cm long; leaflets 5-7, oblong-lanceolate, 3-7 x 2-3.5 cm, base rounded, acuminate at apex dentate-serrate along margins, coriaceous, glabrous on both surfaces; petioles glandular and prickly; petiolules short; stipules oblong, glandular, ciliate. Flowers in many-flowered corymbs, white, fragrant, 3-4.5 cm across;
hymaphin obovoid, bristly glandular, tomentose; sepals 2 0.6 cm, tomentose, bristly glandular outside; petals obcordate, ca 2 cm long; silky pubescent outside; styles united into a calyx, pubescent. Fruits subglobose-ovoid, 1-1.4 x 1.2 cm, yellowish-brown to red when ripe.

Fl. & Fr. April-November

Phongpui, 2000 m, Parry 139 (fide C.E.C. Fischer, l.c.); s.loc., s.num., Parry (CAl); Blue Mountain, Mao 107161.


Climbing, prickly shrubs, 5-7 m high; prickles usually curved; leaflets 7-9, elliptic, uppermost pair larger, 2.3-5 x 1.2 cm, basal pair smallest. Sessile, base rounded, acute at apex, serrate along margins, minutely hairy above, pubescent beneath; petioles and inflorescence eglandular. Flowers in thyrsiform corymbs, 1.5-2 cm across; bracts with dentate margins, eglandular, hairy; hypanthium obovoid, eglandular outside, slightly pubescent; sepals 5, ca 1 cm long, pubescent; petals obovate, ca 1.5 cm long; styles connate into a column, glabrous.

Fl. & Fr. June-July.

Lungleh-Sairep, Dutta 33515.

8. RUBUS L.

1a. Leaves simple, usually palmately lobed or not lobed:

2a. Leaves palmately lobed:

3a. Stems and branches appressed tomentose; 
bracts and stipules appressed villous or hairy; 
leaf lobes rounded ... 11. R. rugosus

3b. Stems and branches patent hairy; 
stipules and bracts erecto-patent hairy; 
leaf lobes otherwise:

4a. Stems and petioles glandular bristly ... 12. R. treusleri

4b. Stems and petioles eglandular:
5a. Leaf lobes 3-7, subacute; underside grey tomentose; calyx lobes lanceolate, patent hairy

5b. Leaf lobes 5, acute; underside pale-brownish tomentose; calyx lobes subacute, silky tomentose but not patent hairy

7b. Leaves not lobed, almost entire:

6a. Branches with soft hairs; leaves white pubescent beneath ...

6b. Branches glabrous; leaves glabrous, not white pubescent on nerves beneath:

7a. Flowers in panicules, sessile; bracts linear-oblong, serrate; calyx densely tomentose ...

7b. Flowers in corymba, pedicillate; bracts setaceous, glandular; calyx glabrous with pubescent margins ...

1b. Leaves pinnately compound:

8a. Leaves 5-7-foliolate ...

8b. Leaves 3- or 3-5-foliolate:

9a. Leaflets 3-foliolate:

10a. Leaflets glabrous on both surfaces ...

10b. Leaflets tomentose beneath:

11a. Leaflets ovate, acuminate at apex; white tomentose beneath; flowers pink ...

11b. Leaflets elliptic or orbicular; obtuse at apex, grey tomentose beneath; flowers white ...

9b. Leaflets 3-5-foliolate ...


Large, climbing shrubs with glabrous branches; prickles small, curved, mostly on stems. Leaves ovate or ovate-lanceolate, 8-15 x 2-7 cm, base
rounded, caudate-acuminate at apex; serrate along margins, reticulate below, glabrous at maturity, pubescent only on veins beneath; pedicles 1-1.5 cm long; stipules subulate. Flowers in short, 5-9 cm long, branched terminal corymb or panicles, white, 0.5-1.2 cm across, panicles or corymb 2-8-flowered; bracts subulate; calyx lobes triangular, entire, with pubescent margins; stamens mauve. Fruits of 5-8 large druplets, scarlet-red, enclosed by calyx.

Fl. & Fr.: August-January.

Zongling, Parry 491 (fide C.E.C. Fischer, l.c.); s.loc., Parry s.n. (CAL).


Subscanttend shrubs; young shoots villous with ereto-patent long hairs; prickles curved or deflexed. Leaves ovate or suborbicular, 3-7-lobed, 5-10 x 3-12 cm; lobes ovate-triangular, acute at apex, closely serrate along margins, glabrous or glabrescent above; velvety grey tomentose beneath; palmately 5-nerved from base; stipules and bracts deeply lobed with ereto-patient hairs. Panicles up to 7 cm long, upper axillary or terminal, patentily pilose; flowers ca 1.5 cm across, white; calyx lobes ovate, patentily villous, 8-12 mm long; petals shorter or equalling the sepals. Fruits globose, 1-1.5 cm across, scarlet-red.

Fl. & Fr.: May-September.

Common, in open places, forest edges and bushes. Upper Tenzawal, K.P. Singh 93927; Serchhip, D.K. Singh 93043; Jawbawk, K.P. Singh 94225.


Fig. 116.

Large, bushy, straggling shrubs; young parts hairy; prickles recurved, small. Leaves simple, ovate-oblong or oblong, 5-10 x 3-4 cm, base subcordate, acuminate at apex, unequally toothed along margins, glabrescent
Fig. 116: *Rubus assamensis* Focke
above, white pubescent beneath, nerves covered with spreading hairs; lateral nerves 5-6 pairs; petioles 2-4 mm long, stipules pectinately lobed. Flowers 0.5-1.2 cm across, white, in conical, terminal, upto 20 cm long panicles; bracts subulate; calyx ovate with silky white hairs outside; petals absent. Fruits globose, 3-6 mm across.

*Fl. & Fr.: April-August.*


Straggling shrubs; branches bristly hairy; prickles hooked or straight with flattened base. Leaves palmately 5-lobed, base cordate, 5-nerved; 6-12 x 5-12 cm, lobes acute or acuminate at apex, hairy or glabrate above, pale brownish tomentose beneath; petioles 5-8 cm long; stipules and bracts divided into capillary segments. Flowers in large panicles, white; calyx lobes subacute, tomentose; petals orbicular, clawed; stamens and carpels many, glabrous; receptacle villous.

*Fl. & Fr.: July-September.*

Phongpui, K.P. Singh 96762, 96796.


Large, straggling, robust shrubs with angled pubescent stems and 3-6 mm long, scattered, deflexed prickles; bristles eglandular. Leaves pinnately 3-foliolate; leaflets broadly ovate, elliptic or orbicular, 3.5-9 x 2.3-7.5 cm, base rounded, obtuse at apex, serrate along margins; glabrous above, densely grey pubescent beneath; petioles 3-5 cm long; petiolules 2-5 cm long; stipules linear. Panicles axillary and terminal; flowers 7-8 mm across, white; calyx bristly; lobes ovate, pubescent; petals obovate. Fruits globose, 10-12 mm across, orange-yellow; druplets many, crowded.

*Fl. & Fr.: February-June.*
Fig. 117: Rubus ellipticus Smith
Common. Near fort Lungleh, Gage 62 (CAL); s.loc., Parry s.n. (CAL); Phongpui. K.P. Singh 96854


Scandent shrubs with glabrous branches; prickles few, scattered, curved. Leaves oblong-lanceolate, 8-12 x 2-6 cm, base rounded, caudate-acuminate at apex, serrate along margins, glabrous at maturity, pubescent only on nerves beneath; petioles very short. Flowers in axillary or terminal, elongated panicles; bracts linear-oblong, serrate; flowers sessile, white; calyx densely appressed tomentose. Fruits globose, scarlet red.

*Fl. & Fr.*: August-February.

S.loc., Wenger 205 (fide C.E.C. Fischer, l.c.).


Scrambling shrubs, 2-3 m high; branches with weak recurved prickles, pubescent, eglandular. Leaves pinnately 3-foliolate; petioles 3-6 cm long; leaflets 3-12 x 24 cm, ovate, base rounded, acuminate at apex, deeply toothed along margins, minutely pubescent above, white tomentose beneath; petiolules 2-3 mm long, terminal, 1-2 cm long; stipules filiform; flowers solitary or 10-12 in axillary or terminal, tomentose racemes. Calyx white with prickles, finely tomentose; petals pink or red, obovate, 4-5 mm long. Fruits ca 1 cm across, red or orange; druplets many, pubescent.

*Fl. & Fr.*: June-August.

Recorded on the basis of C.E.C. Fischer (l.c.).


Large, stout, scandent shrubs with minute, scattered, recurved prickles; branches angled; young parts puberulous, glabrous when old. Leaves pinnately 3-foliolate, up to 30 cm long; common petioles 7-8 cm long.
prickly; leaflets elliptic, ovate-elliptic or orbicular, terminal larger, 10-11 x 5-6 cm, laterals little smaller, 7-9 x 4-5 cm, base rounded, abruptly acuminated at apex, distinctly serrate along margins, coriaceous, glabrous, pubescent on nerves beneath; petioles of lateral leaflets 4-5 mm long, of terminal leaflet 3-3.5 cm long; lateral nerves 8-10 pairs; stipules linear. Panicles up to 30 cm long, axillary or terminal, corymbose; flowers 6-10 mm across; calyx deeply lobed, tube shorter, 3-5 mm long, pubescent; petals little larger, pink. Fruits enclosed in the calyx, red.

Fl. & Fr.: September-February.

Scarce, in the tropical forests. Upper Thenzawl, K.P. Singh 93909.


Shrubs, branches reddish with white bloom and scattered recurved prickles, eglandular. Leaves 5-7-foliolate; petioles 2-4 cm long; leaflets ovate, lanceolate or elliptic, 3.5-5 x 0.8-2.5 cm, base rounded, acute at apex, serrate along margins, subglabrous with impressed veins above, tormentose with prominent veins beneath; stipules lanceolate. Panicles terminal, corymbose; flowers pink, 6-8 mm across; calyx densely tormentose; petals 4-6 mm long. Fruits red, becoming red when ripe; drupes pubescent.

Fl. & Fr.: March-August.

Near fort Lunglei, 900-1200 m, Ginge 58 (CAL); Phougpuir, K.P. Singh 96763


Procumbent shrubs, 1-2 m high, covered with stiff, purple gland-tipped hairs in younger parts only; prickles scattered, straight. Leaves pinnately 3-5-foliolate; petioles 2-4 cm long, prickly; leaflets ovate-lanceolate, 3-4.5 x 1-1.6 cm, base rounded or cuneate, acuminate at apex, doubly serrate along margins, terminal leaflets larger than laterals, glabrate above,
Fig. 118: Rubus niveus Thumb.
pubescent with prickles on veins beneath (specify mud rib); pedicels very short; stipules linear. Flowers ca 2.5 cm across, white, solitary or in 1-5-flowered panicules; calyx deeply lobed, pubescent and sessile, glandular; petals 10-15 mm long. Fruits oblong to subglobose, 1.5 x 0.8-1.2 cm, scarlet or orange-yellow when ripe.

Fl. & Fr. January-October.

Common, along the ridges in open moist places. s.lac., Parry s.n., (CAL); Valley near fort Lungleh, 900 m, Gage 30, 51 (CAL); Kaulkulh-Htipui, K.P. Singh 91318; Phairuab, K.P. Singh 94209; South Vanlaiphai, K.P. Singh 96862.

Uses: Fruits are eaten by tribal people.


Large, scrambling shrubs; young parts brownish, tomentose; stems eglandular with short recurved prickles. Leaves 7-12 x 6-10 cm, 3-5-lobed; lobes rounded or subacute, base cordate, crenate-serrate along margins, rugose above, velvety tomentose beneath; stipules small; petioles 4-7 cm long with recurved prickles. Flowers ca 1 cm across, terminal or axillary, in dense clusters, creamy-yellow or yellowish white; calyx hairy, minutely toothed at apex. Fruits globose, ca 1 cm across, red.

Fl. & Fr. June-October

Valley near fort Lungleh, 900-1010 m, Gage 21 (CAL); Zote, K.P. Singh 94549.


Scrambling shrubs; branches with densely gland-tipped bristles and scattered prickles. Leaves (3)-5-lobed, suborbicular, 5-17 x 5-12 cm, base cordate, acute at apex, serrate at margins, pubescent above, pilose beneath; petioles 3-5 cm long, covered with gland tipped bristles and scattered
Fig. 119: Rubus treutleri Hook. f.
prickles; stipules divided into 4-5 segments. Flowers 3-5, in axillary racemes; calyx tomentose with gland tipped bristles, 3-5-toothed at apex, petals pink or white. Fruits 1.5-2 cm across with many druplets.

Fl. & Fr.: June-August.

Sairep to Tawipui, Dutta 33645.

CULTIVATED TAXA


Widely cultivated for its fruits.

SAXIFRAGACEAE

(K.P. Singh)

BERGENIA Moench


Perennial herbs with thick rhizomes. Leaves rosetted, suborbicular or broadly obovate, 4-15 x 4-14 cm, base and apex rounded, denticulate-densely ciliate along margins, glabrous on both surfaces, gland-dotted beneath; petioles 2-8 cm long, basal 1-4 cm long, sheathing. Flowers 1-20; calyx 5, cup-shaped 7-10 mm long, green, lobes acute, denticulate near apex; petals 5, obovate, white with pink tinge; stamens 10; ovary semi inferior. Capsules ellipsoid, base surrounded by persistent calyx, ca 1 cm across.

Fl. & Fr.: February-April.

Phungplui, 1800 m, Parry 137 (side C.E.C. Fischer, i.e.).
HYDRANGEACEAE

(K.P. Singh)

DICHTHOA Lour.


(Fig. 120.)

 Erect shrubs, 1-3 m tall. Leaves elliptic-oblong, 8-18 x 4-7 cm, base alternate, acuminate at apex, serrate-dentate along margins; sparsely hairy on both sides; petioles 1-3 cm long; lateral nerves 7-9 pairs. Cymes paniculate, terminal, 4-16 cm long. Flowers ca 7 mm across, blue; calyx tube adnate to the ovary; petals valvate, becoming reflexed; stamens 10 or 12; ovary inferior, 1-celled. Berries subglobose, 6-8 mm in diam., glossy blue, crowned by persistent calyx lobes. Seeds numerous, small, reticulate.

Fl. & Fr.: July-December.

Sairep-Tawipui, Dutta 33655, 33869.

ITEACEAE

(K.P. Singh)

ITEA L.


Small trees or shrubs, 5-9 m tall. Leaves alternate, elliptic-oblong or broadly ovate, 10-20 x 6-13 cm, base truncate or rounded, acute or acuminate at apex, glandular-serrate along margins, glabrous; lateral nerves 7-10 pairs; petioles 2-5 cm long. Racemes up to 15 cm long, axillary, mostly from upper leaves, pubescent when young. Flowers white with pink tinge, 3-5 mm across; bracts subulate, caduceous; calyx tube puberulous, obconic, 5-lobed, ca 2 mm long; petals triangular, closely reflexed, ca 3 mm long;
Fig. 120: Dichroa febrifuga Lour.
ovary glabrous, lower half sunk in the calyx cup, semi inferior; carpels 2, united above into simple style and stigma, disc glabrous, intristaminal. Capsules ovate, 0.5-1 cm long, united by styles; seeds caudate at both ends.

*Fl. & Fr.*: April-January.

Common. Aizawl, Deb 30644; Tithilang, K.P. Singh 94060, 96636; Thahtlang-Phongphui K.P. Singh 96773; Lungchhuan, D.K. Singh 97178; Keifang, M. Sawmiliana 99274; Darlawn, 1250 m, M. Sawmiliana 101749.

**CRASSULACEAE**

(D.K. Singh)

1a. Large herbs, up to 2 m tall; petals deeply connate into a tubular corolla

1b. Small to medium sized herbs, rarely up to 1 m high; petals free

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1. **KALANCHOE** Adans.

1a. Plants glandular-pubescent;
   bracts small, lanceolate

1b. Plants glabrous;
   bracts linear or foliaceous:

   2a. Stems fistular; leaves simple, spatulate-oblong; flowers erect or spreading; bracts linear

   2b. Stems nonfistular; leaves simple-7-foliate, oblong-elliptic; flowers pendulous;
   bracts foliaceous

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Perennial, semisucculent herbs; stems 0.3-1 m high; branchlets glandular-pubescent or glabrescent. Leaves simple, decussate, obovate-elliptic or oblanceolate, 5-8 x 1.5-4 cm, base attenuate, rounded-obtuse at apex, crenate along margins, thick-coriaceous, brownish, pubescent. Cymes in dense panicles, often level-topped, branches glabrous, not racemose; bracts
small lanceolate. Flowers yellowish white; sepals 4, lanceolate; petals 4, lanceolate. Fruits up to 1 cm across.

_Fl. & Fr._: November-April.

_S. intro., Parry s.n._ (fide C.E.C. Fischer, l.c.).


Perennial, robust herbs; stems fusiform, 0.3-1.2 m tall. Leaves simple, spatulate-oblong or obovate, lanceolate, 7-20 x 2-5 cm, base cuneate, crenate-serrate along margins, glabrous, upper leaves trifoliate; petioles 2-5 cm long. Cymes subcorymbose, flattish, elongate; bracts few, scattered, linear, 0.6-1.2 cm long. Flowers erect, light yellow-pink, fragrant; sepals ca 7 mm long; lobes elongate-triangular, united at base; corolla tube glabrous, ca 1.5 cm long, constricted at middle.

_Fl. & Fr._: January-April.

_Sairep._ 1500 m, _Parry 480_ (fide C.E.C. Fischer, l.c.).


Erect, perennial, semi-succulent herbs; stems 0.3-2 m tall, branching at the base, with swollen nodes, glabrous. Leaves decussate, simple or 3-7-foliolate, oblong or ovate-elliptic, 7-14 x 3-6 cm, base oblique, obtuse-acute at apex, crenate or subincised along margins, thick-coriaceous, glabrous; petioles greenish, 2-5 cm long with purple blotches. Cymes panicked, up to 20 cm long; bracts foliar: bracteoles linear. Flowers 2-3 cm across, pendulous, green-red; calyx tube green with red blotches, 2-3 cm long, puberulous, lobes 4, triangular, corolla octagonal, 3.5-4 cm long, constricted in middle; lobes 4, ovate. Fruits enclosed within persistent papery calyx and corolla, up to 1.5 cm across.
FLORA OF MIZORAM

*Fl. & Fr.: November-April.*

Lungleh-Sairep, *Dutta 33809.*

2. *SEDUM L.*


Weak, succulent herbs; stems 5-10 cm high, glabrous. Cauline leaves linear, 6-20 x 1.5-2 mm, entire, lower ones acuminate, upper ones obtuse. Cymes leafy corymbose. Flowers bisexual, yellow; sepals narrow-oblong, 4.5-5, 2-4 mm long; petals 4-5, elliptic-lanceolate, ca 5 mm long. Follicles 5, erect; seeds many, obovoid, not compressed.

*Fl. & Fr.: November-February.*

Phongpui, 2300 m, *Parry 406 (via C.E.C. Fischer, i.e.).*

**DROSERACEAE**

(D.K. Singh)

**DROSERA L.**

1a. Acaulescent herbs; leaves in basal rosette, cuneate-spathulate, stipulate

1b. Cauliflorous herbs; leaves cauline, alternate, semicircular-ovaricular, petulate, estipulate


Perennial, insectivorous herbs. Leaves radical rosetulate, obovate-ovaricular, spathulate, 0.5-1 x 0.3-0.6 cm, abruptly narrowed into a flat petiole, reddish green, covered with glandular trichomes above; trichomes elongate, with rounded tip, base attenuate or subtruncate-obtuse; stipules 3-partite, scarious. Racemes 5-20 cm long, many-flowered, with second-subsecond flowers restricted towards apex. Flowers white, up to 1 cm across, bracteate, often bract-opposed, bracts bilobed, glandular, hairy
outside; sepals 5, oblong-broadly lanceolate; petals 5, oblong-lanceolate, spathulate, clawed, obovate. Capsules ovoid, 5-valved; seed-coat black, reticulate.

Fl. & Fr.: January-April.

Panchagram, Deb 31495.


Fig. 121.

Erect, insectivorous herbs, with a basal tuber; stems slender, erect, 8-30 cm high, leafy, glabrous. Leaves dimorphic; radical leaves ephemeral, rosulate; cauline leaves semilunar-deltoid, or suborbicular, 0.25-0.4 x 0.15-0.25 cm, shallowly cupular, brownish green, covered with viscid gland-tipped tentacles above and along margins; tentacles with broader base. Racemes lateral or terminal, up to 5 cm, 2-10-flowered. Flowers white, up to 1 cm across, bracteate; bracts fimbriate at tip, sparsely warty outside; sepals 5, ovate-elliptic, fimbriate, gland dotted; petals 5, obovate-orbicular, spathulate, apex rotund-truncate. Capsules ovoid, 3-5-valved; seed coat black, reticulate.

Fl. & Fr.: May-October.

S. loc.. Parry s.n.; Thalldang. Dutta 33950.

HAMAMELIDACEAE

(D.K. Singh)

1a. Leaves palmately nerved; ovules many in each cell

1b. Leaves pinnately nerved; ovules solitary in each cell:

2a. Petals present

2b. Petals absent

... 1. Exbucklandia

Fig. 121: *Drosera peltata* Smith ex Wиллд.
Tall trees, up to 25 m; crown narrow-elongated; bark blackish-brown, rough; branchlets green, glabrous. Leaves alternate, broadly ovate-orbicular, 6-20 x 4-15 cm, rounded-obtuse or subcordate at base, acute-acuminate at apex, entire or 3 cuspidate when young, dark glossy green above; petioles 5, 2-4.5 cm long, basal nerves 5-7; lateral nerves 3-4 pairs; stipules 1-2, large, oblong-ovate, rounded at tip. Heads 10-20-flowered, initially enclosed within paired stipules, densely rusty-pubescent, glabrate with age. Flowers sessile; calyx limb 5-lobed: petals linear-spathulate, fleshy. Capsules woody, subglobose; 0.6-1 cm across; upper seed not winged, lowest winged.

Fl. & Fr.: October-February.

Usually cultivated.

2. LOROPETALUM R.Br. ex Reichh.


Large, evergreen shrubs or small trees, 3-12 m tall; bark grey; young branches and inflorescence densely stellate pubescent. Leaves alternate, lanceolate-elliptic or oblance-ovate, 2.5-8 x 1.5-2.5 cm, base rounded or cuneate, acute or acuminate at apex, entire-subentire or denticulate along margins, stellate pubescent on both surfaces; lateral nerves 5-7 pairs; petioles 4-5 mm long; stipules deciduous, linear, membranous. Heads 5-8-flowered, quasiterminal, ebracteate. Flowers white-greenish white, 2.5-3 cm across; calyx limb of 4 valvate lobes; petals 4, linear. Capsules ovoid-obovoid, woody, 0.8-1 cm across, stellate tomentose.

Fl. & Fr.: April-November.

Laliphai, 1500 m, Parry 176 (fide C.E.C. Fischer, l.c.).
3. SYCOPSIS Oliver


Small, branched trees, up to 10 m tall; young parts tomentose. Leaves oblanceolate, obovate-oblong or elliptic, 8-13 x 2.5-5 cm, abruptly acuminate at apex, entire along margins, coriaceous, glabrous; lateral nerves loop ing; petioles 1-1.5 cm long, pubescent or glabrate. Flowers in short axillary spikes, unisexual. **Male flowers**: calyx small; petals absent. **Female flowers**: calyx 5-lobed, lanceolate, 2-3 mm long, glabrous; petals absent; ovary 2-celled, stellate tomentose. Fruits ellipsoid, 2-2.5 cm long, stellate-tomentose outside; seeds brown, shiny, 8-10 x 3-4 mm.

*Fl. & Fr.*. July to November.

Scarce. Chamring, 1300 m, *M. Sawmliana s.n.*

Note: The species was reported previously from Meghalaya only.

**RHIZOPHORACEAE**

(D.K. Singh)

**CARALLIA** Roxb.


Small-medium sized evergreen trees, 5-15 m tall; crown compact, oval; occasionally buttressed; bark brownish, with faint vertical fissures. Leaves opposite, oblong-obovate or broadly elliptic, 6-18.5 x 3-8.5 cm, base cuneate, abruptly acuminate or obtuse at apex, entire, coriaceous, lateral nerves 10-15 pairs; petioles short, stout margined, 0.5-1 cm long; stipules lanceolate, caduceous-deciduous. Cymes axillary, compressed, trichotomous, 1-3 cm across. Flowers sessile, 4-5 mm across, creamy white-greenish
yellow, cymose-capitate; calyx tube minutely bracteate at base, limb 5-8
lobed; lobes erect, valvate; petals 5-8, orbicular. Berries globose, 0.5-1 cm
across, pink or red, 1-celled, 1-seeded.

_fl. & fr._ February-May.

Aizawl, 1000 m, Parry 644 (fls & frs. C E C Fischer, i.e.); Lungleh, 1000
m, Gage 57 (CAL); Lungchhuan, D K Singh 93348; Thalding-Phouphui,
K P Singh 96754.

**COMBRETACEAE**

_(D K Singh)_

1a. Calyx limb persistent
1b. Calyx limb deciduous:

2a. Shrubs or sprawling shrubs; leaves opposite; petals present
2b. Trees; leaves alternate or subopposite; petals absent:

3a. Flowers in spikes
3b. Flowers in globose heads

**1. ANOGEISSUS (DC.) Guillon & Perr.**

_Anoteissus acuminatus_ (Roxb. ex DC.) Guillon & Perr. in Fl. Seneg.
1: 280. 65, 1833; C B Clarke in Hook. f, Fl. Brit. India 2: 450. 1878;
_Conocarpus acuminata_ Roxb. ex DC. Prodr. 3: 16. 1828. Zairum
(Lushai).

Large, elegant, deciduous trees, 20-30 m tall, with usually pendulous
branches; bark rough, grey; young branches and inflorescence softly
tomentose. Leaves subopposite, distichous, elliptic or oblong to ovate-
lanceolate, 2.5-8 x 1.5-3 cm, base rounded-cuneate, acute-acuminate at
apex, entire, punctate, glabrescent above; villous pubescent beneath,
petioles short, pubescent, 3-6 mm long. Flowers small, in globose, peduncled
heads; solitary or rarely 2, ca 2 cm across; bracts ovate-lanceolate or
spathulate, tomentose; bracteoles minute, spathulate, woolly; calyx superior,
Fig. 122: Anogeissus acuminatus (Roxb. ex DC.) Guill. & Perr.
5-lobed, ca 3 mm long; tube pubescent; petals absent; stamens 10, in 2 series. Fruits samaroid, 0.5-0.8 cm across, coriaceous, broadly 2-winged, shining, glabrous.

*Fl. & Fr.*: January-April.

Fairly common in tropical areas. Zawlbawk, 600 m, *Parry 391* (tide C.E.C. Fischer, etc); Lungleh, 1000 m, *Gage 109* (CAL); Lambabak, Lushai hills, *fl. Kanjilal, 4753*; Aizawl, G.K. *Deka s.n.*; Sairang, 670 m, *Deb 30569*.

2. **CALYCOPTERIS** L.am.


Straggling, scandent shrubs with drooping branches, 2-6 m tall; branchlets densely rusty tomentose; bark irregularly reticulately fissured, brownish grey. Leaves alternate-opposite, elliptic-oblancoate or oblong, 5-11 x 2.5-4 cm, base obtuse or cuneate, acute or acuminate at apex, chartaceous, rusty tomentose beneath, glabrous above. Panicles terminal or axillary, 15-30 cm long. Flowers ca 3 cm across; bracts foliar, elliptic; calyx lobes >, creamy, lanceolate-falcate, velvety, punctate; limb 5-fid, persistent and accrescent in fruits; petals absent. Fruits ovoid, ellipsoid, 0.8 x 0.25 cm, 5-ribbed; wings membranous, oblanceolate or obovate.

*Fl. & Fr.*: January-April.

*Demagiri, 150 m, Gage s.n.* (CAL).

3. **COMBRETUM** Loefl.

1a. Flowers pantanaceous; fruits 5-winged:

2a. Bracts green; flowers more than 1 cm long; calyx limb funnel-shaped

... 4. *C. pilosum*

2b. Bracts creamy white; flowers less than 0.5 cm long; calyx limb cup-shaped

... 6. *C. roxburghii*
1b. Flowers tetramerous; fruits 4-winged.

3a. Petals shorter than calyx lobes, usually notched at apex; spikes simple from fallen leaf axils.

3b. Petals equaling or longer than calyx lobes, not notched at apex; spikes panicled, terminal or axillary from upper leaf axils.

4a. Fruit surface fibrillar scaly

4b. Fruit surface not fibrillar scaly.

5a. Leaf base cordate; petals obovate

5b. Leaf base cuneate; petals linear

\[ \ldots 2. \textit{C. griffithii} \]

\[ \ldots 5. \textit{C. punctatum} \]

\[ \text{subsp. squamosum} \]


Large, straggling or scandent shrubs; young parts and inflorescence reddish or brown tomentose, mixed with coppery, peltate scales. Leaves opposite, elliptic to elliptic-oblong or obovate-lanceolate, 0.6-20 x 4-10 cm, base rounded or narrowed, abruptly acuminate at apex, glabrescent with age or pubescent along the nerves, glandular-punctate on both surfaces; petioles 5-7 mm long; lateral nerves 8-12 pairs. Panicles terminal or axillary. Flowers up to 0.6 cm across, yellow; bracteoles linear-spathulate, subpersistent; calyx densely covered with scales, teeth erect, triangular; petals broadly obovate, ca 2 mm long, larger than calyx, shortly clawed. Fruits orbicular, 2.5-4 cm across, 4-winged, covered with resinous glands and linear-lanceolate scales.

\textit{Fl. \& Fr.}: April-December.


\textbf{Fig. 123.}
Fig. 123: Combretum griffithii Heurck & Maell.-Arg.
   a) A flowering; b) A fruiting twig
Large, woody, climbing shrubs; young parts and inflorescence rusty villous or tomentose. Leaves opposite or ternate, oblong-lanceolate, oblanceolate or obovate, rarely elliptic, 7–16 x 3–7 cm, cordate-subcordate at base, acuminate at apex, puberulous punctate below, glabrous, punctate or dotted above; petioles 5–8 mm long, lateral nerves 7–10 pairs. Panicles terminal-axillary, up to 20 cm long; spikes few, suberect. Flowers pale green-yellow, 3–4 mm across; bracteoles linear, shorter than flowers; calyx densely covered outside with brownish red scales, ca 2 mm long, teeth triangular, acute, erect; petals small, 2–3 mm long, narrow, obovate. Fruits large, 2.5–4 cm long, stipitate, 4-winged, dotted with scattered, small, round glands, yellow-brown to brown.

Fl. & Fr.: March–December

Common, in tropical forests. Lungleh, 1000 m, Gage 187 (CAL); s.loc., Godfrey 480 (CAL); Sairang, 660 m, Deb 30574; Kolasib-Chummilang, Dutta 33300; Sairep forest, Dutta 33591; Kawnpui forest, K.P. Singh 96979; North Vanlaiphai D.K. Singh 93094.


Large, scandent shrubs, more or less glabrous; bark vertically furrowed, dark brown. Leaves opposite-subopposite, broadly orbicular-elliptic, elliptic-oblung or ovate, 10–18 x 5.5–10 cm, base cuneate-attenuate, scaly when young, abruptly acuminate at apex, glabrous on both sides, punctate at maturity; petioles 2–3 cm long, lateral nerves 5–8 pairs. Panicles axillary, up to 15 cm long. Flowers white, tetramerous, 5–8 mm across; calyx teeth acuminate, reflexed, ca 3 mm long, truncate-oblung or obovate, extending into a claw; petals shorter than calyx lobes, notched at apex. Fruits obovoid-subglobose, 3–4.5 cm across, 4-winged, wings scarious.

Fl. & Fr.: November–March.

Champhai, Deb 31067.

Fig. 124: Combretum pilosum Roxb.
Gigantic, scandent shrubs; young parts covered with rusty or brownish spreading hairs. Leaves opposite, oblong-oblanceolate, oblong-elliptic, 9-15 x 3-6 cm, base cordate-cuneate, acuminate at apex, entire, glabrescent above, pubescent on the nerves beneath; petioles 4-5 mm long; lateral nerves 6-8 pairs. Panicles terminal, densely rusty-blackish villous. Flowers white or pink with purple blotch, up to 2 cm long. Bracts greenish; bracteoles linear-lanceolate, persistent, densely pilose, calyx funnel-shaped. Limb 8-12 mm long, pubescent; teeth triangular, acuminate, ca 2 mm long; petals exceeding the calyx teeth, oblong-obovate, obtuse, silky pubescent. Fruits elliptic or ovoid, up to 2.5 cm long, 5-winged, pubescent or sometimes glabrous.

*Fl. & Fr.*: January-October.

Panchagram, *Deb 31473.*


Large, woody, scandent shrubs; bark greyish brown; young parts covered with minute, peltate scales. Leaves opposite, orbicular-elliptic or lanceolate, oblong-obovate, 8-15 x 5-10 cm, base obtuse or cuneate, acuminate-apiculate at apex, entire along margins, glandular-punctate; petioles 1-2 cm long; lateral nerves 5-7 pairs. Panicles axillary-terminal, up to 12 cm long. Flowers whitish-yellow, 2-4 mm across; bracteoles subulate, fugacious; calyx funnel shaped, ca 7 mm long; teeth short, 4, triangular; petals small, spathulate-obovate, tapering into a claw. Fruits ovoid, 2.5-4 cm long, yellow-brown, 4-winged; wings covered with rounded scales.

*Fl. & Fr.*: October-May.

Common, in tropical evergreen forests. *Lungleh, Gage 110, 111* (CAI); *Thehrat, Deb 31286; 31333; Lungleh, Dutta 33420; Chumliang to Meiboi, Dutta 33342; Kolasib-Builung, D.K. Singh 93149 (ASSAM); Phairuang, K.P. Singh 94206; Durlaw-Ratu, K.P. Singh 97113 (ASSAM).

Gigantic, evergreen, scandent shrubs; young parts and inflorescence brown, silky villous; bark with vertical fissures, reddish brown. Leaves opposite, elliptic, elliptic-lanceolate or obovate-oblong, 7-15 x 3-8 cm, base obtuse or cuneate, abruptly acuminate at apex, more or less glabrous; petioles 5-10 mm long; lateral nerves 6-8 pairs. Spikes dense, up to 7 cm long, arranged in terminal or axillary panicles. Flowers pentameric, 3-4 mm across, greenish white, brownish-red or purplish brown; bracts large, creamy white, pubescent; bracteoles subpersistent, villous; calyx ca 2 mm long, pubescent, cup-shaped, lobes linear, acuminate; petals 5, pubescent, exceeding the calyx lobes, oblong. Fruits up to 3 cm long, oblong-ovoid, 5-winged, nearly glabrous.

*Fl. & Fr.* November-April.

*Common, in evergreen tropical forests.* Sairang, 670 m, *Deb* 30590; Lunglei: *Dutta* 33384; Darlak, *Deb* 3408.

4. **TERMINALIA L.**

1a. Fruits 2-winged, very small

1b. Fruits lacking wings, usually large sized:

2a. Leaves clustered at the end of branches; spikes simple; drupes tomentose, globose:

2b. Leaves scattered; spikes paniculate; drupes glabrous, elongate-siliproid:

3a. Leaf petiole 3-6 cm long, drupes globose, tomentose

3b. Leaf petioles 0.6-1.8 cm long, drupes ellipsoid, glabrous

4a. Petiolar glands distinct; leaves pubescent on veins below; panicles pubescent; fruits oblong

4b. Petiolar glands indistinct or absent, leaves glabrous; panicles rusty tomentose; fruits subglobose

Deciduous trees, 25-40 m tall; trunk buttressed at base; young parts rusty tomentose. Leaves whorled at the end of branches, obovate to broadly elliptic, 5-15 x 6-10 cm, base obtusely truncate, abruptly acuminate at apex. glabrous above, glaucous beneath; petioles 3-6 cm long, usually with the glands; lateral nerves 5-8 pairs. Spikes simple, axillary from new shoots, puberulous, drooping, 6-12 cm long. Flowers yellowish, foetid, smelling, ca 6 mm across; calyx hairy outside, woolly within; limb cup-shaped with 5 teeth. Drupes globose, 2-3 x 2-2.5 cm in diam., grey, tomentose.

*Fl. & Fr.*: April-December.

Recorded on the basis of state forest department records. Probably grows in mixed forests in dry places.


Tall trees, up to 27 m; stems often buttressed at base; branches in horizontal whorls. Leaves alternate, clustered at the end of branches, obovate-oblong or obovate 15-25 x 7-12 cm, base narrow-cordate, hairy when young, glabrescent at maturity; midrib with 2 depressions near the base; petioles 0.6-1.8 cm long. Spikes solitary, axillary; flowers white, upper male, lower bisexual; calyx teeth glabrous. Drupes ellipsoid, 2-5 cm long. slightly compressed, glabrous, keeled; endocarp hard.

*Fl. & Fr.*: February-May.

Recorded on the basis of state forest department records.

Large, deciduous trees, 20-35 m tall; crown dense, compact; bark blackish-grey, vertically furrowed; young parts rusty pubescent; branchlets white, lenticellate; leaves subopposite-alternate, ovate or elliptic-ovate, 7.18 x 6-8 cm, base rounded, cuneate at base, abruptly acuminate-acute at apex, thin coriaceous, glabrous except the midrib; petioles 1-2 cm long, glands indistinct. Spikes panicled, axillary, 5-7 cm long, rusty pubescent. Flowers yellow-creamy white, 0.4-0.7 cm across, with obnoxious smell; bracts linear, deciduous; calyx villous within, glabrescent outside, 5-lobed, cup-shaped; lobes triangular. Drupes obovoid, subglobose ca 4 x 2.5 cm, glabrous, horned, faintly angled, yellowish-green when ripe.

Fl. & Fr.: May-March.

Not common. Lungleh, Dutta 33889.

Uses: Wood is hard and used in furniture making.


Small-large, deciduous trees, often with buttressed stems towards base; bark brown, more or less vertically fissured. Leaves opposite-subopposite, broadly ovate, lanceolate, elliptic or oblanceolate, 4-12 x 1.5-6.5 cm, acuminate or acute at apex, glabrous at maturity, pubescent on nerves beneath, base narrowed into petiole; petioles 1-2 cm long, biglandular; lateral nerves 8-12 pairs. Racemes panicled, terminal and axillary, 7-15 cm long; bracts small, linear-spathulate, silky pubescent, deciduous. Flowers dull white; calyx teeth glabrous outside, villous within. Drupes oblong ellipsoid, slightly clavate, 2.5-4 x 1.5-2 cm, glabrous, obscurely 5-angled.

Fl. & Fr.: June-December.

Recorded on the basis of state forest department records.


Fig. 125.
Fig. 125: Terminalia myricarpa Heurck & Müll.-Arg.
Gigantic, evergreen trees, up to 35 m tall, with pendulous branchlets; bark brown-grey, scaly with vertical flakes, young parts and inflorescence rusty pubescent. Leaves oblong-lanceolate or oblong-elliptic, 10.23 x 4.8 cm, base truncate-subcordate, acute or shortly acuminate at apex, denticulate-entire along margins, glabrous above when mature, hairy on the nerves beneath; petioles 5-8 mm long, thick with 2 glands near the tip; lateral nerves subparallel, numerous. Spikes slender, lax, arranged in terminal or upper axillary panicles, up to 25 cm long. Flowers pink-yellow, up to 0.5 cm across; bracteoles lanceolate or deltoid subulate; calyx glabrous outside, pubescent within, teeth erect. Drupes up to 0.5 cm long and 12 mm across, with 2 lateral wings, yellow.

Fl. & Fr.: September-May.

Aizawl, 1050 m, G.K. Deka 1; Sialsuk, 1340 m, Deb 30693.

Uses: Wood is durable and polishes well, and used in furniture making.

Recently J.H. Lalramnghinglova (J. Econ. Tax. Bot. Addl. ser. 12: 446. 1996) recorded Terminalia arjuna (Roxb. ex DC.) Wight & Arn. from the state. The decoction of its bark is used for washing ulcers and the leaf juice is used for earache.

HERNANDIACEAE

(D.K. Singh)

ILLIGERA Blume


Large, scandent shrubs; stems striate, more or less glabrous. Leaves alternate, 3-foliate; petioles 5-15 cm long, sometimes coiling like tendrils; leaflets oblong, oblong-elliptic, elliptic-lanceolate or ob lanceolate, 5-10 x 2.5 cm, base rounded or cordate, acute or short acuminate at apex, glabrous. Panicles terminal and axillary, cymose, up to 25 cm long, drooping, pubescent. Flowers dull-reddish brown, 1-1.5 cm long; bracteoles 1, small, ovate or elliptic; tepals in 2 whorls of 5 each, oblong-lanceolate, acuminate; staminodes not petaloid, deeply emarginate. Fruits 1.8-2.5 x 3.5-5 cm, 2-
winged, with a sharp longitudinal ridge on either face; wings brown, glabrous, with transverse striations.

Fl. & Fr.: August-February.

Theiriat, Deb 31248; Zotethiang, 1750 m, D.K. Singh 92809.

MYRTACEAE

(K.P. Singh)

1a. Fruits dry capsular;

2a. Flowers in proliferous spikes; petals not calyptrae; filaments crimson-red
   ... 1. Callistemon

2b. Flowers not in spikes; petals calyptrae; filaments otherwise
   ... 2. Eucalyptus

1b. Fruits bacicate;

3a. Leaves glabrous on both surfaces, often pellucid dotted; calyx not closed in bud; ovary bi-celled
   ... 4. Syzygium

3b. Leaves pubescent beneath; not pellucid dotted; calyx closed in bud; ovary many-celled
   ... 3. Psidium

1. CALLISTEMON R. Br.


Shrubs or small, aromatic, evergreen trees with drooping branches; young parts hairy. Leaves alternate, linear-lanceolate, 2-8 x 0.3-0.6 cm, base narrowed, apex sharply pointed, coriaceous, glabrous at maturity, densely gland dotted; petioles short, 2-3 mm long. Flowers 2-3 cm long along with stamens, in terminal leaf bearing spikes, crimson; calyx campanulate, 4-5 mm long, hairy; lobes 5; petals 5, suborbicular; stamens many, very long, exerted, brightly coloured, free. Capsules woody with truncate apex, 0.5-0.8 cm long.

Fl. & Fr.: Throughout the year.
Native of Australia usually cultivated in the gardens and parks. Phairuang, K.P. Singh 94211, Sainyob 1350 m, May 107014.

2. EUCALYPTUS L. Herit


Tall trees with whitish or greyish smooth bark. Leaves alternate, linear-lanceolate, 10-18 x 1.5-2.5 cm, falcate; petioles 1-1.5 cm long. Flowers usually in 3-flowered umbels or in panicles; calyx tube 5-8 mm long, adnate to ovary; petals united with calyx lobes to form a hemispherical lid, much shorter than the calyx tube. Fruits ovoid, 10-12 x 8-10 mm.

Fl. & Fr.: January-March.

Common, usually cultivated. Lushai hills, Forest Research Centre, Aizawl, H. Rama 49 (Forest Department Herbarium).

3. PSIDIUM L.


Small or medium sized trees, up to 10 m tall with pinkish-brown, smooth bark. Leaves opposite, decussate, ovate, oblong or elliptic-oblong, 5-15 x 4-8 cm, base cordate, obtuse or acute at apex, entire along margins, glabrous above, ferruginous-tomentose below; lateral nerves 6-10 pairs; peduncles 1-3-flowered, axillary; flowers greenish-white, 2-4 cm across; calyx urceolate; petals free. Berry yellowish-white, pyriform; seeds many, immersed in pulp.

Fl. & Fr.: March-Dec.

Usually cultivated for its edible fruits. Aizawl-Taitaw, Dutta 33216; Kolasib, K.P. Singh 93150.

4. _SYZYGIUM_ R. Br. _ex_ Gaertner

1a. Inflorescence usually terminal or upper axillary:
2a. Flowers less than 1.5 cm across.

3a. Calyx tube elongated, 1.5-1.8 cm long, cylindrical ... 2. S. claviflorum

3b. Calyx tube short, 4-6 mm long, turbinate or hemispherical:

4a. Petals united, calyptrae: berries globose ... 9. S. obtusatum

4b. Petals free, not calyptrae; berries oblong ... 4. S. densiflorum

2b. Flowers more than 1.5 cm across:

5a. Leaves narrowed at both ends ... 6. S. jambos

5b. Leaves rounded or subcordate or cordate at base:

6a. Fruits turbinate, depressed, flattened at both ends ... 1. S. aqueum

6b. Fruits globose:

7a. Leaves 10-25 x 3-7 cm; lateral nerves 15-22 pairs; petioles almost absent or very short; calyx tube 1.3-1.8 cm long ... 5. S. dingyripetalum

7b. Leaves 15-30 x 4-10 cm; lateral nerves 20-25 pairs; petioles ca 1 cm long; calyx tube 1.5-3 cm long ... 8. S. megacarpum

1b. Inflorescence usually lateral or from fallen, or lower leaf axils:

8a. Leaves ternate, narrow-lanceolate; petals 12-16 ... 11 S. polygodorum

8b. Leaves opposite, broadly lanceolate, oblong-elliptic or obovate; petals usually 4:

9a. Flowers ca 1.5 cm across; petals free ... 7. S. kurzii

9b. Flowers 4-8 mm across; petals calyptrae:

10a. Lateral nerves 8-12 pairs; leaves obovate with apiculate apex; fruits globose, up to 1.2 cm long ... 10. S. operculatum

10b. Lateral nerves numerous; leaves oblong-elliptic with acute apex; fruits oblong, up to 2.5 cm long ... 3. S. cumini

Evergreen trees, 5-10 m tall with quadrangular or terete branches. Leaves variable, opposite, oblong-lanceolate or ovate-oblong or ovate-lanceolate, 16-20 x 3.5-5 cm, base cordate, subamplexicaul, acuminate at apex, entire along margins, chartaceous to coriaceous, glabrous; lateral nerves 15-20 pairs; petioles hardly differentiated on dorsal side, 1-2 mm long. Inflorescence terminal and axillary, 3-7-flowered. Flowers greenish-white, 2.5-4 cm across, shortly pedicellate; calyx tube 1.5-2 cm long, turbinate-clavate; lobes 4, unequal; petals 4, free, ca 1.2 cm long, rounded. Berries depressed-turbinate, pear-shaped, 1.5-2 x 2.5-3.5 cm, light red or white, flattened at both ends, crowned by calyx lobes, 1-4-seeded; endocarp fleshy, edible.

Fl. & Fr.: March-June.

Probably cultivated as a fruit tree. Aizawl station, 600 m, Deka 23459.


Small to medium sized, evergreen trees, 8-10 m tall. Leaves oblong-lanceolate, 5-18 x 2-5 cm, base acute or cuneate; acuminate at apex, coriaceous, glabrous; lateral nerves numerous; petioles short, 5-6 mm long. Cymes axillary or sometimes from axils of fallen leaves. Flowers sessile, 8-10 mm across; calyx tube cylindrical, 1.5-1.8 cm long; lobes 4-5, subacute; petals 4-5, free, 3-5 mm across, orbicular. Berries 2-4 cm long, ovoid-oblong, bluish when ripe.

Fl. & Fr.: March May.

Mizo hills, Dutta 88470.

Large, glabrous, evergreen trees, up to 35 m tall with umbrella-shaped crown. Leaves variable in size and shape, decussate, oblong-elliptic, oblanceolate-elliptic, 7-15 x 4-8 cm, base attenuate, acute, subobtuse, abruptly acuminate at apex, glabrous, shining, coriaceous; lateral nerves many; petioles 1-2.5 cm long. Cymes panicked; pistils up to 10 cm long, axillary or lateral below the leaves or rarely terminal, colybiaceous or pyramidal. Flowers 6-8 mm across, greenish-white, borne in clusters of 3-8 at the end of branches of panicles; calyx tube turbinate, 3-5 mm long, obovate; petals calyptate, fugacious. Berries variable in size, up to 2.5 cm long, oblong-ovoid, red, turning purplish-black when ripe, juicy; seeds solitary with thick rounded fleshy cotyledons.

Fl. & Fr.: February-July.

Very common, on the hilly slopes in exposed places. Lawngtalai, Dutta 33757; s.loc. Dutta 92469; Kolasib, K.P. Singh 93291; Phaileng, K.P. Singh 97064; Darlawn-Ratu, D.K. Singh 97112; Rualling, M. Swamliana 95536; Darlawn, 1200 m, M. Swamliana 97179.


Large trees with spreading crown; branchlets quadrangular. Leaves opposite, elliptic-oblong, 3-8 x 2.5-4 cm, base narrowed, caudate-acuminate at apex, coriaceous, pinkish-red when young, olive green when dry; lateral nerves many; petioles ca 1.5 cm long. Flowers in dense terminal, axillary umbellate cymes, sessile; bracts caducous; calyx tube short, turbinate; lobes 4; petals cream-coloured, distinct; stamens white. Berries oblong, 1.3-1.5 cm long.

Fl. & Fr.: November-June.

Theiriat, Deb 31290 (CAL).

Medium sized trees, 10-15 m tall with buttressed base. Leaves oblong-lanceolate or narrowly ovate, 10.25 x 3.7 cm, base subcordate or sub-amplexicaul, acuminate at apex, glabrous, glaucous beneath; lateral nerves 15-22 pairs, prominent beneath; petioles absent or very short. Cymes short, few-flowered, terminal, 2-4 cm long, usually cauliflorous below the leaves; flowers 2-3.5 cm across, white, smelling like apricot; calyx tube 1.2-1.6 cm long, obconic; lobes orbicular, 0.8-1 cm across; petals ovate, orbicular, ca 1 cm across. Berries oblong-subglobose, 2-3.5 cm across.

Fl. & Fr.: August-May.

Thenzawl, Parry 184 (fide C.E.C. Fischer, i.c.).


Medium sized trees, up to 15 m tall with subglobose crown; branchlets glabrous. Leaves lanceolate or oblong-lanceolate, 11-20 x 2.5-5 cm, cuneate at base, acuminate at apex, entire along margins, thin-coriaceous, glabrous; lateral nerves 15-20 pairs; petioles ca 1 cm long, channelled. Cymes terminal, racemose, ca 10 cm long; flowers 3-6 cm across, white to dull-white; calyx lobes 4, turbinate, ca 1.5 cm long; lobes ovate-orbicular, subequal, obconic, petals 4, obovate, 1.5-1.7 cm long, rounded; ovary: stamens many, unequal; ovary bi-celled. Berries globose or pyriform, 2.5-4 cm across, yellowish-white to pink tinged, crowned by the inflexed calyx lobes, yellow or white when ripe; seeds 1-2, grey.

Fl. & Fr.: April-August.

Aizawl, Parry 659 (fide C.E.C. Fischer, i.c.); Sairop-Tawipui, Dutta 33637; Lawngtalai forest, Dutta 33/67.

Medium-large trees, 25-30 m tall with white-pale grey, compressed or subtetragonous branchlets. Leaves broadly lanceolate-elliptic or oblong-lanceolate, 9-20 x 2.5-8 cm, acute-attenuate at base, obtusely acuminate at apex, entire along margins, coriaceous, glabrous, pale beneath, gland dots small; lateral nerves 8-14 pairs; petioles 0.8-2 cm long. Inflorescence 5-flowered, branched or panicked cymes; cymes solitary or fascicled in leaf or fallen leaf axils; flowers white, up to 1.5 cm across; pedicels up to 1.2 cm long; calyx tube clavate-turbinate, 0.7-1 cm long; lobes 4, rounded; petals 4, free, 0.5-0.65 cm long. Berries globose, ca 1.3 cm in diam., smooth, 1-2 seeded, crowned by spreading calyx lobes.

Fl. & Fr.: March-July.

Mamit, 900 m, M. Sawmliana 107426.

Uses: Wood used as fuel.


Medium sized trees, 3-8 m tall with a lax crown. Leaves opposite, 15-32 x 4-10 cm, oblong-lanceolate to elliptic, oblong-elliptic; 15-32 x 4-10 cm, base rounded or cordate, acuminate at apex, coriaceous, glaucous beneath; lateral leaves 20-25 pairs, prominent; petioles short, ca 1 cm long. Cymes subcorymbose, few-flowered, terminal or rarely axillary; flowers sub sessile, 4-5 cm across, white, drooping; calyx lobes 4, persistent, unequal, broader than long; tube obconic 1.5-3 cm long; petals free, orbicular, up to 2.5 cm across with broad base; style persistent, exserted. Berries large, subglobose, 2.5-5 cm across, crowned by the inflexed calyx lobes, edible; seeds many.

Fl. & Fr.: March September.

Common, inside tropical forests. Lungleh, Dutta 33418; Kawnpui, K.P. Singh 97038; Dampa, D.K. Singh 99121.

Evergreen trees, 17-30 m tall with an oval crown, branchlets and petioles often reddish. Leaves elliptic-lanceolate or obovate-elliptic or oblong-lanceolate, 6-11 x 3-5 cm, base rounded or acute, cuneate, abruptly caudately acuminate at apex, coriaceous, dark green and shining above at maturity; gland dots distinct; lateral nerves many, inconspicuous; petioles 4-7 mm long. Cymes corymbosely panicked, 2.5-6 cm long, axillary or terminal; flowers 1-1.5 cm across, white; calyx tube 4-6 mm long, truncate; lobes 4 or 5, unequal short; petals calyptrate; stamens white. Berries globose, 1-1.5 cm across, black or reddish purple.

*Fl. & Fr.*: October-May.


Evergreen, glabrous trees, 10-16 m tall, with ± compressed branchlets. Leaves obovate or oblong-lanceolate, 7-13 x 4-9 cm, base acute, ± apiculate at apex, coriaceous, glabrous; lateral nerves 8-12 pairs; petioles 1-2.5 cm long. Panicles very short peduncled or almost sessile; flowers mostly in threes, 4-5 mm across, white, sessile; calyx 3-4 mm long, campanulate, gland dotted; lobes 4; petals calyptrate, suborbicular. Berries globose, 0.6-1.2 cm across, juicy, 1-seeded.

*Fl. & Fr.*: May to August.

Recorded on the basis of C.E.C. Fischer (*l.c.*).

Fig. 126: Syzygium oblatum (Roxb.) Wallich ex Cowan & Cowan

Small trees with lax crown and branching from near the base; branchlets with prominent leaf scars. Leaves ternate or 4 in a whorl, linear-lanceolate or elliptic, oblong-oblancoolate, 10-18 x 1-3 cm, base narrowed, attenuate, acuminate at apex, recurved at margins; lateral nerves 8-12 pairs; petioles short, 2-3 mm long. Cymes umbellate, few-flowered, mostly lateral from the axils of fallen leaves; Flowers 3-4 cm across, white; calyx tube, 1.5-2 cm long, campanulate; lobes 4-6, reddish-brown, ca 1 cm across, petals ovate, 12-16. Free, style long, persistent. Berries subglobose.

*Fl. & Fr.*: March-July.

*Tuivolmukh, Parry 167 (sede C.E.C. Fischer, l.c.).

**LEYCHIDACEAE**

(K.P. Singh)

1a. Flowers in long pendulous racemes; fruits angular, 1-seeded . . . . . . 1. *Barringtonia*

1b. Flowers in short spikes; fruits globose, many-seeded . . . . . . . . . . . . . . . 2. *Caraya*

1. **BARRINGTONIA** J.R. & G. Forst.


Small trees, up to 20 m tall. Leaves crowded at the end of the branches, elliptic or obovate to oblancoolate, 7-15 x 2.5-6 cm, base tapering, acute or acuminate at apex; lateral nerves 8-17 pairs; petioles short, 2-4 mm long. Racemes terminal, up to 50 cm long, pendulous, densely flowered, glabrous; bracts oblong; flowers 2-3 cm across; calyx tube funnel-shaped; sepals 4, free, semicircular; petals 4 or 5, 3-5 mm long, adnate to the base, falling early; stamens in whorl, numerous, red, connate below; ovary 2-celled, inferior. Fruits oblong, 2-6 x 1-2.5 cm, bluntly quadrangular, crowned with persistent calyx lobes, 1-seeded.
Fl. & Fr.: March October.

Reported on the basis of Deb & Dutta (l.c.).

2. CAREYA Roxb.


Deciduous trees, up to 20 m tall with ovoid spreading crown. Leaves crowded at the end of branches, alternate, obovate to oblanceolate, 12-27 x 7-15 cm, base attenuate, cuneate, apex obtuse or rounded, denticulate or crenate at margins, glabrous or shining on both sides; lateral nerves 10-15 pairs; petioles 2-4 cm long, margined or winged upwards. Flowers 6-9 cm across, sessile, white with pinkish tinge, provided with 3 unequal bracts and crowded in terminal, few-flowered stiff spikes; calyx 2-2.5 cm long with campanulate tube; petals 5-7 cm long, elliptic, caducous; stamens many; filaments up to 7 cm long, purple. Berries globose or ovoid 5-8 x 3-4 cm, with persistent calyx and style, greenish-yellow; seeds ca 1 cm in diam., numerous, embedded in fleshy pulp.

Fl. & Fr.: March-August.

S.linc., Parry s.num. (fide C.E.C. Fischer, l.c.).

MELASTOMATACEAE

(K.P. Singh)

1a. Leaves pinnate-nerved; basal nerves indistinct; ovary 1-celled, with few ovules; fruits 1-seeded

... 3. Mammeeplum

1b. Leaves palmately 3-9-nerved from base; basal nerves distinct, ovary 2-many-celled with many ovules; fruits many-seeded

2a. Flowers 3-merous; stamens 3;
fruit a capsule, dehiscing by valves

... 7. Sanderia

2b. Flowers 4-5-merous, stamens twice the numbers of petals; fruit a berry or if capsule then dehiscing by pores:
3a. Stamens unequal in length:

4a. Petals 5; stamens 8, ovary apically glabrous, 4-celled; fruits dry, capsular
   5 Opporpota

4b. Petals 4; stamens 10-12, ovary apically bristly hairy or scaly, 5-6-celled; fruits fleshy
   ... 2. Melastoma

3b. Stamens equal in length:

5a. Erect epiphytic shrubs or small trees; fruits baccae
   ... 1. Medinilla

5b. Erect or ascending herbs; fruits dry, capsular:

6a. Calyx obpyramidal; 4-winged; petals connate in lower part, stamens distinctly appressed; fruits quadrangular; seeds straight, obvoid
   ... 6. Surcorynaris

6b. Calyx 2 tubular, not winged; petals free; stamens not appressed; fruits terete; seeds curved, falcate
   ... 4. Osbeckia

1. MEDINILLA Gaudich


Shrubs or small trees, usually epiphytic, up to 5 m high. Leaves elliptic to lanceolate, 6-12 x 2.5-5 cm, base cuneate or narrowed, acuminate at apex; glabrous above, glaucous beneath, petioles 3-10 mm long, scarious red. Flowers 1.5-2 cm across, pink, in axillary, many-flowered, short penduncled cymes; peduncles 2-5 mm long; calyx ca 3 mm long; tube campanulate-oblong; anthers with short spur petals pink, ovate. Berries globose, 4-6 mm across, black when ripe.

Fl. & Fr.: July-December.

Scarce, in shady moist places. Sairep, K.P. Singh 96678.
2. MELASTOMA L.

1a. Leaves thinly pubescent with hairs completely appressed on the upper surface; bracts large, lanceolate, enclosing the buds; calyx lobes glabrous inside

..1. _M. malabathricum_

1b. Leaves densely pubescent with hairs free at one end on crest; bracts ovate, not enclosing the buds; calyx lobes ± hairy inside

..2. _M. nepalensis_


Branched, bushy shrubs, up to 4 m tall; young parts and petioles strigose with scales. Leaves oblong-lanceolate or elliptic-lanceolate, 5-12 x 3-5 cm, base rounded, acute or shortly acuminate at apex, scabrous and appressed hairy above with rows of white cells at base of very short hairs, densely silky or villous beneath, scaly strigose on main nerves; basal nerves 3-5; petioles 8-20 mm long, scaly strigose. Flowers in clusters of 1-8 at the end of branches, 5-6 cm across, purple; bracts large, elliptic or lanceolate, scaly outside; calyx 10-15 mm long, densely silky; lobes ovate, acute; petals large, broadly obovate, 15-25 mm; larger stamens purple, smaller yellow. Fruits 7-10 mm across, subglobose-ovoid, purple, tuncate at apex.

_Fl. & Fr.: Throughout the year._

Rather common, in open places and along the road side. Panchagam, _Deb_ 30461; Siatsuk, _Deb_ 30751 (both CAL); Tawipui-Thingtal, _Dutta_ 33677.


Large shrubs or small trees, up to 6 m tall; branches shaggy with subulate bristles at the nodes. Leaves oblong-lanceolate to ovate-lanceolate, 4-10 x 1.5-3.5 cm, base rounded to acute, short acuminate at apex, pubescent with long appressed hairs above and densely silky or villous
beneath; nerves scaly; basal nerves 3-5; petioles 5-8 mm long. Flowers 4-5 cm across, 3-10 in terminal clusters; bracts ovate; calyx 10-16 mm long; lobes pubescent, ovate lanceolate. Fruits ovoid, 6-8 mm across, pulpy.

Fl. & Fr.: Throughout the year but mainly from May-December.

Very common, in slopes and road cuttings. Aizawl; 900 m, Parry 668 (fide C.E.C. Fischer, l.c.); Near fort Lunglei, 900 m, Gage 73 (CAL); North Vanalai, D.K. Singh 93066; Kawnpui forest, K.P. Singh 96978.

3. MEMECYLON L.


Evergreen, small trees, 10-12 m tall. Leaves elliptic-lanceolate to ovate-lanceolate, 7-14 x 4-6 cm, base acute or cuneate, acuminate at apex, glabrous on both surfaces, glossy above; lateral nerves visible beneath; petioles 5-6 mm long. Flowers 1-15 mm across, sky-blue, forming pour umbels on 5-15 mm long, compressed, axillary peduncles; calyx white, bell-shaped, ca 1-2 mm long, white; petals ovate, 1-2 mm long. Berries globular, 6-10 mm across, glabrous, 1-seeded with short calyx limb.

Fl. & Fr.: April-November.


Note: This species closely resembles M. cerasiforme Kurz in almost all the characters except fruits which are larger (10-16 mm) in size.

4. OSBECKIA L.

1a. Usually herbs or undershrubs, flowers capitulate, anthers beaked:

2a. Leaves linear-lanceolate, calyx tube covered with scales...2. O. chinensis
2b. Leaves ovate to elliptic-ovate; calyx tube not covered with scales

1b. Usually large branched shrubs; flowers paniculate; anthers attenuate:

3a. Calyx tube glabrous

3b. Calyx tube stellate hairy:

4a. Calyx tube densely hairy; capsule neck short or not exceeding half the length of ovary; densely hairy, dilated at the top

4b. Calyx tube sparsely hairy; capsule neck cylindrical, equalling or exceeding the ovary; much longer than its own breadth, nearly glabrous


Perennial herbs, up to 50 cm high, branches 4-angled, arising near the base, strigose; hairs ascending, adpressed with pubescent base. Leaves opposite, subsessile, ovate to elliptic-ovate, 1.5-2.5 x 0.5-1 cm, base rounded, acute at apex, pubescent on both surfaces; basal nerves 3-7. Flowers capitate on the end of branches, 1.5-2 cm across, pinkish-purple, bracts ovate, 5-7 mm long, ciliate; calyx 8-10 mm long; lobes lanceolate, ca 3 mm long, ciliate; petals ca 10 mm long. Capsules ovoid, 5-8 x 4.5 mm, glabrous.

Fl. & Fr. June-October

Darlot- Leite, Dutta 34102.


Fig. 127.

Weak, erect herbs or undershrubs, up to 60 cm high; branches covered with ascending, adpressed hairs. Leaves opposite, oblong to linear-lanceolate, 1.5-3.5 x 0.2-0.6 cm, base rounded to subobtuse, acute at apex, pubescent on both surfaces with adpressed hairs; basal nerves 3-5; petioles
Fig. 127: Osbeckia chinensis L.
absent or ca 1 mm long. Flowers capitate at the end of branches, 2–2.5 cm across, purple to pink-purple, tetramerous; bracts 4–6 x 2-4 mm, elliptic or ovate; calyx lobes 4, 5–6 x 3 mm; lobes ciliate; petals 10–12 mm long; stamens 8, yellow. Capsules ovoid, 5–6 mm long, glabrous.

Fl. & Fr.: March–October.

Scarce, in open grass lands. Champai, Parry 343 (fide C.E.C. Fischer, l.c.); Zote, K.P. Singh 94551.


Hirsute shrubs, up to 2.5 m tall; hairs with pinkish, bulbous base. Leaves lanceolate, 7.5–11 x 2.3–3.4 cm, base subcordate, acute to acuminate at apex, hairy on both surfaces with adpressed hairs; basal nerves 5–7; petioles small, 5–10 mm long. Flowers 2–2.5 cm across, purple or pure white, tetramerous (rarely pentamersus) in close corymbs or cymes; bracts ovate, hairy on back; calyx 1 cm long; lobes subulate, stellate–hairy; petals obovate, ca 1 cm long; ovary stellate hairy. Capsules ovoid, ca 1.2 cm long, suddenly narrowed to a cylindrical neck; neck of the fruit equalling or exceeding the ovary, glabrous.

Fl. & Fr.: July–October.

Near Lunglei, Parry, s.n. (CAL); Lawngtalai-Kawchaw, K.P. Singh 92861.


Erect shrubs, up to 1.5 m tall. Leaves opposite, lanceolate-ovate, 6–16 x 2–5 cm, base rounded to cuneate, acuminate at apex, glabrous to strigose along the nerves; basal nerves 5; petioles 5–12 mm long. Flowers in terminal, up to 15 cm long, panicked cymes, 3-5 cm across, pinkish-purple, tetramerous; bracts ovate-ciliate, 4–6 x 3–4 mm, calyx 1.5–2 cm long, glabrous or sparsely hairy; lobes 8–10 x 5 mm, ciliate; petals 1.5–2 cm long, ciliate; stamens 8. Capsules cylindrical or ovoid 10–20 x 5.0–3.0 mm, with a narrow neck, glabrous or nearly so.
Fl. & Fr.: July-September.

S.lcs., Lorrain s.str. (s.l. C.E.C. Fischer, l.c.).


Fig. 128.

Shrubs, up to 2.5 m tall; stems covered with spreading rigid hairs. Leaves oblanceolate, 5-12 x 1.5-5 cm, base cuneate, acuminate at apex, hairy on both surfaces; base 5-nerved; petioles 5-15 mm long. Flowers in terminal and upper axillary corymbose cymes, ca 2.5 cm across, rose purple or white; bracts ovate; calyx lobes ca 6 x 1 mm, densely hairy. Capsules ovoid-oblong, 15-20 x 5.6 mm, narrowed into a neck, stellate hairy in basal portion.

Fl. & Fr.: August-March.

Kawlihkulh Hliapui road, K.P. Singh 94334; Zote, K.P. Singh 94574; Blue Mountain, 200 m. Mao 107153.


5. OXYSPORA DC.

1a. Young parts fugaceous, stellate, scurfy and deciduously bristly; petioles with a tuft of bristly hairs at the tip; leaves usually 7-nerved, rarely 5-nerved ...

1b. Young parts with spreading hairs; petioles without tuft of hairs at the tip; leaves usually 5-nerved from base.


Fig. 129.

Shrubs, up to 2 m tall. Leaves opposite, elliptic-broadly lanceolate, 10-12 x 4-8 cm, base rounded to subcordate, acute to acuminate at apex,
Fig. 128: Osbeckia sikkimensis Craib.
Fig. 129: Oxyspora paniculata (D.Don) DC.
Glabrescent above, bibrly and scurfy along the nerves beneath, membranous; basal nerves 5-7; petioles 2-2.5 cm long. Panicles copious, drooping, 18-26 cm long, branches ending in cymes; flowers with purple pedicels, 10-15 mm across, pink-purple; calyx tube 5-6 mm long; petals ovate, ca 7 mm long. Capsules ellipsoid, ca 10 mm long, 8-ribbed.

_Fl. & Fr._: Throughout the year but mainly during July-October.

On hill slopes and along the forest edges in shaded places. Tuisenbhar, 1200 m, Parry 325 (fide C.E.C. Fischer, _l.c._); Phongphui, 1560 m, Parry 526 (fide C.E.C. Fischer, _l.c._) Kawhikul-Tuichang road, K.P. Singh 94443, Ruallung, _M. Sawmliana_ 95537; Seleng, _M. Sawmliana_ 95539; Hnathial, 760 m, _Meso_ 107007.


Shrubs, 1.2 m tall. Leaves opposite, elliptic to ovate lanceolate, 7-15 x 5-9 cm, base subcordate, acute to acuminate at apex, membranous, glabrous except nerves above; base 5-7-nerved; petioles 1-6 cm long. Panicles terminal. Flowers ca 1 cm across, purplish-red; calyx tube ca 6 mm long, pubescent with constricted neck; petals ca 6 mm long, acuminate. Capsules ellipsoid, 5-6 x 4-5 mm, glabrous, 8-ribbed.

_Fl. & Fr._: September-March.

Reported on the basis of C.E.C. Fischer (_l.c._).

6. **SARCOPYRAMIS** Wallich


Erect, weak, glabrous herbs, 13-20 cm high; stems succulent. Leaves grouped near the top of stem, ovate-lanceolate, 2-5 x 1-2.5 cm, base acute, subequal, long acuminate at apex, serrulate along margins, membranous; basal nerves 3; petioles 10-25 mm long. Flowers 10-12 mm across, pink-rose purple, solitary or 2-3-flowered in fascicles, terminal and axillary;
pedicels 2-6 mm long; calyx obpyramidal, 4, 2-3 mm long, glabrous lobes fimbriate; petals ovate; 4, ± 6 mm long; stamens 8, equal. Capsules ovoid, ± 7 mm long, quadrangular.

_Fl. & Fr.:_ August-January.

Near springs. Thikak, 1200 m, Parry 54 (fide C. E. C. Fisher, _l. c._); Sialuk, 1310 m, Deb 30714.

7. _SONERILA_ Roxb.

1a. Stemless herbs

1b. Herbs with distinct stems:

2a. Herbs up to 10 cm high; leaves 1-2.5 cm long; margins entire; pedicels up to 0.5 cm long

2b. Herbs 10-20 cm high; margins serrulate and ciliate; petals 2.5 cm long


Small herbs, up to 10 cm high; stem absent. Leaves ovate to oblong-ovate, 1-3 x 0.7-2 cm, base rounded to subcordate; acute to subobtuse at apex, serrulate, ciliate at margins, upper surface scattered, bristly hairy; basal nerves 3-5(-7); petals 1-4 cm long, hairy; hairs reddish-brown. Pedicels 2.5-9 cm long; flowers 1-1.5 cm across, purple; calyx campanulate, 3-5 mm long, glabrous; petals elliptic, 5-6 mm long. Capsules obovate, ca 4 mm long, funnel shaped.

_Fl. & Fr.:_ July-February.

On Wet rocks. Langleit, 64 miles South, 750-1200 m, Wengar 323 (fide C. E. C. Fischer, _l. c._); Sairep, _K. P. Singh_ 94180; Hnabial, 760 m, _Mao_ 107026.


Fig. 131.
Fig. 130: Sonerila khasiana C.B. Clarke
Fig. 131: Sonerila maculata Roxb.
Small herbs, 10-20 cm high; stems with spreading hairs. Leaves opposite, ovate to lanceolate, 3.0-10 x 2.0-5.0 cm, base unequal to rounded, acute to attenuate at apex, serrulate and ciliate along margins, both surfaces with spreading hairs, under surface sometimes purple; lateral nerves 4-6 pairs; petioles 2.0-5.0 cm long, hairy. Flowers 3-merous, 10-12 mm across, purple, present in condensed, axillary, scorpionoid cymes; calyx tube 3-5 mm long, campanulate, glabrous; petals ± 7 mm long, elliptic. Capsules 5-7 x 2-4 mm, glabrous, oblong, funnel-shaped.

Fl. & Fr.: September-February.

Very common, on ground in moist places inside forests. Aizawl, 900 m, Parry 48, 49, 50, 51 (fide C.E.C. Fischer, l.c.); Lungleh, Gage 259 (CAL); Kheitum, Deb 31189; Aizawl to Taitaw; Dutta, 33207; Lawngtalai to Kawlthaw, K.P. Singh 92876; Denglang track, K.P. Singh 94118; Tut, on way to Mamit, D.K. Singh 99004; Teir, 280-1300 m, M. Sattmiana 101742.


Weak herbs, up to 10 cm high. Leaves ovate-elliptic, 1-1.2 x 0.7-1.2 cm, base rounded, subacute at apex, nearly entire along margins, membranous, upper surface sparsely hairy, petioles up to 5 mm long. Peduncles 3-5 cm long; flowers 3-merous, pale pink, in axillary and terminal scorpionoid spikes; calyx tube funnel-shaped, ± 5 mm long; petals 3, ovate. Capsules trigonous, ± 6 mm long, funnel-shaped-obconical, narrowed towards base.

Fl. & Fr.: July-December.

Scarcely, occurs in grass edges of dry hill-rice fields. Blue mountain, 80 miles South-East of Lungleh, 900-1200 m, Wenger 395 (fide C.E.C. Fischer, l.c.).

LYTHRACEAE

(K.P. Singh)

1a. Trees or shrubs, calyx thick:
2a. Petals absent; flowers minute ...1. Crypteronia

2b. Petals present; flowers showy:

3a. Flowers in terminal or axillary panicles; leaves not gland dotted; calyx tube straight, not reflexed; seeds winged above ...4. Lagerstroemia

3b. Flowers in branched or simple short racemes; leaves black gland dotted beneath; calyx tube curved, scarlet; seeds not winged ...6. Woodfordia

1b. Small herbs, calyx membranous.

4a. Flowers zygomorphic ...3. Cuphea

4b. Flowers Actinomorphic;

5a. Flowers solitary or in spike or racemose inflorescence; petals present; capsules 2-4-valved ...5. Rotala

5b. Flowers in axillary cymose inflorescence; petals absent; capsules unicellular ...1. Ammannia

1. AMMANNIA L.


Annual, erect, glabrous herbs, up to 50 cm high. Leaves opposite or alternate, oblong to narrow-elliptic or oblanceolate, 1.5-4 x 0.3-1 cm, base cuneate, acute at apex, entire at margins; petioles absent. Cymes dichasial, compact; flowers axillary in dense clusters on stem, 4 or 5-merous; calyx tube hemispherical, ca 2 mm long; lobes 4(-5); petals absent. Capsules globose, 1-1.5 mm across, depressed; seeds black, ca 20.

Fl. & Fr.: December-April.

Lungleh, 1200m, Parry 88 (fide C.E.C. Fischer, i.e.).

2. CRYPTERONIA Blume

Trees, 15-20 m tall with fluted stem. Leaves opposite, lanceolate to ovate-lanceolate, 4-12 x 3-5 cm, base acute or tapering, acuminate at apex, entire at margins, glabrous on both surfaces; petioles 5-10 mm long. Panicled racemes branched near the base or fascicled at the end of branches or on nodes, 8-13 cm long; flowers ca 2 mm across, greenish-pale; calyx tube cup-shaped, ca 1 mm long; lobes 5, triangular; petals absent; stamens 5. Capsules globose, ca 0.25 cm across with a persistent style, pubescent; seeds many.

Fl. & Fr.: October-March.

Thingphal, 900 m, Parry 443 (fide C.E.C. Fischer, i.e.); Hau ruang, 4 miles from Lungleh, 66 m, Deb 31383.

3. CUPHEA P. Browne

Cuphea balsamona Cham. & Schlecht in Linnaea 2: 363. 1827.

Small, much branched herbs, up to 30-75 cm high with ascending branches arising slightly above the ground; young parts hairy. Leaves opposite, shortly petiolate, elliptic-oblong or ± obovate, 1-2.5 x 0.5-1 cm, base narrowed, acute at apex, entire along margins, coarse to hairy on both surfaces. Flowers extra axillary, solitary or in small leafy racemes, deep pink, 6-10 mm long; calyx tubular, 3-5 mm long, longitudinally ribbed with short spur at base of posterior side; lobes short; petals 6, oblong-obovate, 2-3 mm long, slightly unequal; stamens 11; style enclosed within calyx. Capsules enclosed by hypanthium, dehiscing on one side; seeds 2-6, ± rounded, 1-15 mm across, flat, brown.

Fl. & Fr.: Throughout the year.


4. LAGERSTROEMIA L.

1a. Flowers more than 4 cm across; calyx tube ribbed... 3. L. speciosa
1b. Flowers less than 4 cm across; calyx tube not ribbed.

2a. Flowers less than 1 cm across; petals white, 5-6 mm long; fruits ovoid-ellipsoid... 2. L. parvifolia
2b. Flowers more than 1.5 cm across; petals white or pink 1-1.5 cm long; fruits oblongic... 1. L. indica

Shrubs to small trees, up to 10 m tall with greyish white, smooth bark. Leaves subsessile, oblong or obovate, obovate-orbicular, 3-7 x 2-3.5 cm, base cuneate or narrow, suborbicular or subacute at apex, glabrous on both sides at maturity. Panicles subpyramidal, 10-20 cm long puberulous; flowers 2-3 cm across, very attractive, pink, rose or white; calyx not ribbed; petals suborbicular, 1-1.5 cm long, clawed with much crisped margins; claw slender, ca 8 mm long. Capsules oblong, up to 1 cm across.

Fl. & Fr.: May-December

Commonly cultivated as ornamentals.


Deciduous, tall trees, up to 30 m with rust coloured, smooth bark. Leaves ovate, ovate-elliptic or ovate-lanceolate, 3-10.5 x 2-4.5 cm, base rounded; apex acute or acuminate, entire along margins, glabrous above, puberulous along the nerves beneath, coriaceous; lateral nerves 5-7 pairs; petioles 3-7 mm long. Panicles or cymes axillary or terminal, 2-3-flowered, up to 20 cm long; flowers 0.5-0.7 cm across, white, fragrant; calyx not ribbed; tube cupular with 6 teeth; petals 6, 5-6 mm long, clawed; claw ca 2 mm long; limb 3-4 mm long, margins undulate. Capsules 1.5-3.5 cm long, ellipsoid or ovoid; lower portion immersed in the accrescent calyx. Seeds with terminal wings.

Fl. & Fr.: April-December.

Commonly cultivated as ornamentals.


Fig. 132.
Fig. 132: *Lagerstroemia speciosa* (L.) Pers.
Trees, 10-18 m tall with grey or pale brown, smooth bark. Leaves elliptic, oblanceolate or oblong-lanceolate, 10-20 x 4-8 cm, base rounded or truncate, acuminate at apex, entire along margins, glabrous on both surfaces, nerves prominent beneath; lateral nerves 10-12 pairs; petioles 5-10 mm long. Panicles terminal, up to 25 cm long; flowers 3-8 cm across, mauve-purple; calyx 12-15 mm long, tormentose; calyx tube ribbed with 6 teeth; petals 6-7, 3-4 cm long, crumpled; margin erose; claw 5-7 mm long. Capsules oblong-ovoid, 2-3 cm across, smooth, seated on persistent woody, ribbed calyx tube; seeds ca 1.5 cm long, winged.

Fl. & Fr.: June-December.

Saarep forest, Duna 33585; Kolasib, D.K. Singh 93147; Tenzawal, K.P. Singh 93908; Phairuang, K.P. Singh 94200; Hnathial, 780 m, Moe 107024.

5. ROTALA L.

1a. Leaves cauleine, ovate to elliptic; flowers solitary, axillary in many leafy spikes; petals linear, persistent; capsules 2-valved

... 1. R. indica

1b. Leaves cauleine, broadly elliptic or suborbicular; flowers in dense terminal spikes; petals deciduous; capsules 4-valved

2. R. cumulifolia


Annual, creeping or ascending, glabrous herbs, 10-30 cm; stems narrowly winged; branches fleshy, quadrangular. Leaves opposite, larger on main stem, obovate or spatulate, 40-17 x 7-9 cm, base narrowed or subcordate, acute to obtuse-mucronate at apex, sessile. Flowers solitary, axillary in ca 4 cm long, lateral spikes, purple; calyx tube campanulate, ca 2 mm long, appendages absent; lobes 4, lanceolate; petals 4, obovate, 0.5 mm long. Capsules ellipsoid, ca 2 mm long, bivalved, i.e.

Fl. & Fr.: January-October.
In moist rice fields. Panchagaram, Deb 31492.


Perennial, glabrous herbs with creeping stems and many erect branches, 10-25 cm in length. Leaves opposite, sessile, elliptic or suborbicular, 0.5-1 x 0.4-0.9 mm, base rounded to narrow, rounded at apex. Flowers 1.5-2 cm long, in terminal dense leafless spikes, purple, tetramerous; calyx tube campanulate, ca 1.5 mm long, appendages absent; lobes 4, ca 1 mm long; petals 4, obovate-suborbicular, ca 1.5 mm long. Capsules ellipsoid, 4-valved; seeds ellipsoid, brown-yellow, peltate.

Fl. & Fr.: November-May.

Scarcce, in marshy land. Thenzawl, 900 m, Parry 86 (fide C.E.C. Fischer, l.c.); Panchagaram, Deb 31489; Mizo hills, Dutta 88447.

6. WOODFORDIA Salish.


Shrubs, ca 1 m high with spreading long branches and reddish brown bark; young parts hairy with small black glands. Leaves opposite, subsessile, linear-lanceolate, 5.5-10 x 1.5-2.3 cm, base rounded, acuminate at apex, puberulent above, grey, pubescent and gland dotted beneath; lateral nerves 6-12 pairs. Flowers in fascicled axillary racemes, scarlet; calyx tube tubular, 1.0-1.5 cm long, red, oblique at mouth; lobes 6; petals 6, white, small, rarely exceeding the calyx lobes; stamens exerted; filaments red; ovary 2-celled. Capsules ellipsoid, ca 1 cm long, enclosed within persistent calyx tube.

Fl. & Fr.: January-May.

Champhai, 1500 m, Parry 185 (fide C.E.C. Fischer, l.c.); s.loc., Parry, s.num. (CAL); Vombuk, 1500 m, Parry 605 (fide C.E.C Fischer, l.c.); 5 km Lungleh-Champhai road, Deb 31063.
Fig. 133: *Rotala rotundifolia* (Roxb.) Kochne
PUNICACEAE

(K.P. Singh)

PUNICA L.


Shrubs or small trees, up to 5 m tall, branches near the base and often provided with spines. Leaves opposite or clustered, oblong or obovate, 1.5 x 0.5-2 cm, base narrower, apex obtuse or narrower, entire along margins, surface shiny, glabrous on both surfaces. Flowers at the top of the branchlets, orange-red; calyx tube funnel-shaped, 2-3 cm long, coriaceous, red or pale yellow; lobes 5-7, 8-12 mm long, erecto-patent or slightly recurved, thick; petals brightly red, 1.2-1.5 x 1-2 cm, erecto-patent or patent with rounded apex. Berries subglobose, 3-12 cm in diam., red-pink or yellowish-white, crowned by calyx segments; seeds numerous, juicy.

Fl.: Feb-May; Fr.: May-June.

Usually cultivated for edible fruits in the gardens or in residential compounds. Siasuk, Dutta 33478.

SONNERATIACEAE

(K.P. Singh)

DUABANGA Buch.-Ham.


Tall, evergreen trees, up to 28 m with narrow crown and elongated drooping branches. Leaves opposite, oblong to ovate-oblong, 12-30 x 5-12 cm, base cordate, apex shortly acuminate, entire along margins, glabrous on both surfaces, coriaceous; lateral nerves 20-26 pairs; petioles short,
thick, 0.3-0.5 cm long. Flowers 6-8 cm across, creamy-white, in compound terminal corymbs; calyx 6-8-lobed, cup-shaped; cup 2-3 cm across, persistent, segments 1.5-2 cm long; petals 2.5-3 cm long, falling early, clawed, crumpled; stamens many. Capsules ovoid globose, 5-7 cm across, glabrous, coriaceous, brownish; seeds minute.

Fl. & Fr.: March to October.

Very common, along roadside in open places. Aizawl; 900 m, Parry 642 (fide C.E.C. Fischer, l.c.); Lunglei, 900 m, Gage 72 (CAL); on way to Theiriat, Deb 31251; Blue mountain, Dutta 33443; Lawngtalai-Kawlchaw, K.P. Singh 92850; Kolasib, D.K. Singh 93124, Wadhiwa 96691.

ONAGRACEAE

(K.P. Singh)

1a. Petals white or yellow; capsules breaking up irregularly into pieces; seeds not comaose

1b. Petals purple; capsules narrowly linear, 4-valved; seeds comaose

... 2. Ludwigia

1. EPILOBIUM L.


Perennial erect herbs or undershrubs, up to 1 m high; upper leaves alternate; lower leaves opposite, elliptic to oblong, lanceolate, 1-3.5 x 0.5-1.5 cm, base cuneate to rounded, subacute at apex, serrulate-dentate along margins, sparsely pubescent specially on nerves; lateral nerves 5-6 pairs; petioles up to 2 mm long. Flowers ±1 cm across, magenta pink, solitary or in panicked terminal racemes; calyx tube villous; lobes 4, oblong-lanceolate, ca 5 mm long; petals 4, obovate, ca 6 mm long. Capsules linear, 5-7 cm long; seeds numerous, oblong, brown with silky coma.

Fl. & Fr.: September-December.

N. Vanlaiphei, 1500 m, Parry 362 (fide C.E.C. Fischer, l.c.).
2. LUDWIGIA L.

1a. Aquatic herbs with floating or creeping stems; petals 5, white,ila. L. adscendens

1b. Decumbent or erect herbs or undershrubs; petals 4, yellow:

2a. Seeds dimorphic... 2. L. hyssopifolia

2b. Seeds not dimorphic:

3a. Stamen 5, seeds uniseriate... 4. L. prostrata

3b. Stamen 3, seeds pluriseriate... 3. L. ovata


Aquatic or semiaquatic herbs with profusely branched creeping stems, producing white, spongy, pseudo-pneumatophores at their nodes. Leaves alternate, variable, elliptic-oblong or oblanceolate, 1-5 x 0.5-2 cm, base narrowed, rounded at apex, glabrous on both surfaces; petioles 0.5-1.2 cm long, sparsely pubescent. Flowers axillary, solitary, white, sepals 5, 5-8 x 1.5-2 mm; petals 5, ovate; 8-12 x 5-7 mm; stamens 10. Capsules linear-cylindric, 1-3 x 0.3-0.4 cm, 10-ribbed, thick-walled, pubescent or glabrous; seeds pale brown, uniseriate in each cell, enclosed in a corky segment of the endocarp.

Fl.: Jan.-March; Fr.: Feb.-December.

Reported on the basis of Deb & Dutta (i.e.).

2. Ludwigia hyssopifolia (G.Don) Excell, Garcia de orta 5: 471-474, t.2. 1957; Raven in Steenis, Fl. Males, 1, 8: 104. 1977; Jussiaca hyssopifolia G. Don, Syst. 2: 693. 1832.

Annual herbs, up to 3 m tall, much branched with narrowly winged stems. Leaves alternate, elliptic to lanceolate, 2-5 x 0.5-1.2 cm, base narrowed, acute at apex, glabrous on both surfaces, nerves prominent beneath; petioles short, 3-5 mm long; flowers solitary, yellow; sepals lanceolate, 4, 2-3 x 0.8 mm; petals 4, elliptic; 2-3 x 1-2 mm; stamens 8; pollen grains shed singly. Capsules thin walled, linear, cylindric; 1.5-2 x 0.2

FLORA OF MYANMAR

619
cm, seeds dimorphic; lower seeds uniseriate in each cell of capsule, brown, oblong, embedded in a cube of hard endocarp, cube ca 1 mm across; upper seeds free, pleuroseriate, pale brown, ovoid, little shorter than lower seeds.

*Fl. & Fr.*: Throughout the year.

Occurs in moist open places. Lawngtalai-Kawlhkulu, K.P. Singh 92871.


Branched herbs or undershrubs, up to 2 m tall. Leaves lanceolate or linear-lanceolate, 2-5 x 0.3-1 cm, base narrowed, apex acute or acuminate, sparsely hairy usually along the nerves beneath; lateral nerves 10-20 pairs, almost sessile. Flowers solitary, axillary, 2-2.5 cm long, tetramerous; calyx tube linear, wholly adnate to the ovary; sepals 4, ovate or lanceolate, 4-6 x ca 1 mm; petals 4, yellow, obovate; 4-5 mm long; stamens 8. Capsules linear-cylindrical, 1.5-2.5 x 0.2-0.4 cm, thin walled, 8-ribbed, pubescent; seeds pleuroseriate, reddish brown, grooved.

*Fl. & Fr.*: Throughout the year.

Panchagram Deb 10464


Small, prostrate to erect annual herbs, 30-60 cm high, subglabrous. Leaves alternate, elliptic to lanceolate, 1-6 x 0.5-1.5 cm, base narrowed, apex acute, thin glabrous on both surfaces; lateral nerves 8-15 pairs; petioles 2-10 mm long. Flowers axillary, solitary; sepals 4, deltoid, 1-2.5 x 0.5-1 mm, glabrous; petals 4, spatulate, yellow, 1-2.5 x 0.3-0.8 mm; stamens 4. Capsules 4-angled, thin walled, 1-2 x 1 mm, glabrous; seeds uniseriate, ovoid, pale brown.

*Fl. & Fr.*: October-April.
Fig. 134: Ludwigia prostrata Roxb.

**TRAPACEAE**

(K.P. Singh)

**TRAPA L.**


Aquatic, floating, annual herbs with long flexuous stems. Leaves dimorphic; floating leaves in rosette, crowded in upper part of stem, broadly rhomboid, 2.4.5 x 2.5-6.5 cm, crenate toothed on upper margins, glabrous, green and mottled brown above, densely hairy and reddish-purple beneath; petioles up to 12 cm long, inflated; submerged leaves opposite, pinnately dissected into root like inner segments. Flowers solitary, axillary, white, tetramerous; pedicels incurved at first, afterwards bending down below water; calyx hairy, 2 of the lobes becoming spines in the fruits; lobes lanceolate, acute; petals obovate; stamens 4. Drupes top-shaped, 2.5-3.5 cm across, 2-horned, 1-seeded, brown, ripening under water, surface uneven.

*Fl. & Fr.:* August December.

Common, in lakes, ponds and tanks in the areas adjacent to Assam and Bangladesh. Usually cultivated for their edible fruits. Chimmitupui; Palak lake, 290 m, Laigmonghinglota 97178.

**PASSIFLORACEAE**

(K.P. Singh)

1a. Flowers unisexual; corona absent or indistinct

1b. Flowers bisexual; corona present, distinct
1. **ADENIA** Forsk


Large, glabrous climbers with woody base. Leaves palmately 3 or sometimes 5-lobed, distantly situated, 11-16 x 10-16 cm, lobe width 3-6 cm. base cordate or subtruncate, glabrous on both surfaces, biglandular on under surface near the base; main nerves 5-6; lateral nerves 2-5 pairs; petioles 5-8 cm long. Flowers 5-7 mm across, in axillary cymes; peduncles 10-15 cm long, dichotomously branched, terminating in a tendril. *Male flowers*: calyx 5-lobed, campanulate, 1-1.2 cm long; petals 5, smaller than sepals, obovate-oblong; stamens 5. *Female flowers*: sepals and petals same as in male flowers. Capsules obovate, 5-6 x 4 cm, on 1.2-1.5 cm long carpophore, 3-valved, narrowing at both ends; seeds many, reniform, flat, covered with white stony aril.

*Fl. & Fr.: June-September.*

*S. loc. Dutta, 33248; Thenzawl-Chipher village, K.P. Singh 93945.*

**PASSIFLORA L.**

1a. Leaves simple, ovate elliptic

1b. Leaves 3-lobed:

2a. Leaves pubescent on both surfaces

2b. Leaves glabrous on both surfaces:

3a. Bracts with two glands at the base

3b. Bracts without such glands at the base


Perennial, woody climbers with glabrous stems. Leaves alternate, 3-lobed up to half of the length or more, 5-10 x 5-10 cm, base somewhat rounded; middle lobe more wider than two lateral lobes obovate or elliptic,
5-10 x 4-6 cm, acute to acuminate at apex, toothed along margins, glabrous on both surfaces; stipules 1 x 1 cm long, linear, subulate; petals 0.8-1.5 cm long, biglandular at apex. Flowers solitary, axillary or in terminal 3-4 cm long peduncles, 6-6.5 cm across; calyx saucer-shaped; lobes oblong, 2-2.5 cm long; petals oblong, 1-2.5 cm long, white or purplish; corona filaments 4 or 5 seriate; stamens 5. Fruits ellipsoid, glandular, 4-6 cm across, dark purple or brown purple, dotted; seeds oval, 5-7 x 3-4 mm, black, reticulate.

Fl. & Fr.: April-July.


Climbing or trailing herbs with foetid smell and densely hispid branchlets. Leaves 3-lobed to half way down, suborbicular-ovate, 3-8 x 3-7 cm, base cordate, appressed glandular hairy on both surfaces; lobes acuminate or acute at apex, middle one larger and lateral smaller, 5-nerved at base; margins with gland tipped setaceous hairs; petals 2-3.5 cm long, eglandular, gland tipped-hairy; stipules subreniform, 5-10 mm long, pinnatisect, glandular-pubescent. Flowers greenish white, up to 4 cm across, solitary, axillary; peduncles 2-3 cm long; calyx tube saucer-shaped, ovate-lanceolate, up to 15 mm long; petals 5. Slightly shorter than calyx tube, oblong-lanceolate. Fruit a berry, globose, 2-3 cm across, invested by the epicalyx, yellow or red; seeds ellipsoid, ca 4 x 6 mm, pitted.

Fl. & Fr.: October-May.

Scarce in the area. Tuichang, new bridge road, K.P. Singh 94244.


Glabrous, tendril climbers with terete stems. Leaves alternate, 3-lobed, 6-12 x 5-10 cm, base cordate, serrate at margins, membranous, glabrous on both sides; basal nerves 3; petals 5-8 cm long with two glands at apex. Peduncles 6-10 cm long; bracts biglandular at base; flowers 5-7 cm across; calyx tube campanulate; sepals lanceolate-oblong; 2-3 cm long; petals ± equal to sepals, white or lavender; corona many, purple or pink. Fruits ovoid-globose; 3-5 cm across, seeds ovate, 0.4-0.5 cm long, truncate.
Reported on the basis of C.E.C. Fischer (l.c.). A North American species probably cultivated in the gardens.


Glabrous, slender, tendril climbers with angular stems, up to 2.5 m tall. Leaves alternate, ovate to lanceolate, 5-10 x 2 x 4.5 cm, base rounded or subcordate, acute to acuminate at apex, ± entire along margins, glabrous on both surfaces, basal nerves 3-5; lateral nerves 3-5 pairs; petioles 2-5 cm long with two glands. Flowers in axillary cymes, 0.8-1.2 cm across, whitish, cup-shaped; sepals 0.7-0.8 cm long, not horned; petals 0.6-0.7 cm long; corona filiform; stamens 5. Fruits subglobose to globose, 1-1.2 cm across, glabrous, purplish; seeds 10-15, ± 0.2 cm across, obovoid.

Fl. & Fr.: June-September.

Kawihkuli, 1200 m, Parry 75 (sede C.E.C. Fischer, l.c.); Thalhang to South Vanlaiphai, Dutta 34007.

CARICACEAE
(K.P. Singh)

CARICA L.


A herbaceous tree, 2-6 m tall, with milky latex and sometimes branching above; stem soft. Leaves alternate, spirally arranged, forming a crown above, palmately 5-9-lobed; lobes variously divided: base cordate, long petioled; petioles up to 1.5 m long, fusiform. Dioecious; male flowers in long axillary drooping panicles, yellow, sessile; stamens 10, in two series; female flowers 2-3 cm across, yellow, in axillary short clusters; corolla gamopetalus, ovary free, 1-5-celled; ovules many. Fruits large, 1-celled berry, ellipsoid-obovoid, 12-25 x 10-18 cm, ripe ones yellow or orange-yellow; seeds many, black.
Fl. & Fr.: Throughout the year.

Commonly cultivated in Jhum land for edible fruits almost everywhere in Mizoram.

CUCURBITACEAE

(K.P. Singh)

1a. Ovules pendulous; flowers usually in panicles; stamens 5:

2a. Leaves simple, not divided into leaflets

2b. Leaves pedately divided into leaflets:

3a. Fruits trigonous, obovoid

3b. Fruits not trigonous, pea-like

... 3. Gymnosophy

1b. Ovules horizontal; flowers not in panicles; stamens usually 3 (except in Tithoniantha):

4a. Petals fimbriate:

5a. Leaves coriaceous, racemes rusty tomentose; petal fringes ca. 15 cm long; ovules 12, seeds 6

5b. Leaves membranous; racemes not rusty tomentose; petal fringes much shorter; ovules and seeds many

... 10. Trichosanthes

4b. Petals entire:

6a. Anther cells flexuose or conduplicate:

7a. Stamens inserted at the mouth of the calyx tube; anthers free; tendrils 3-5-fid

7b. Stamens inserted below the mouth of the calyx tube; anthers cohering; tendrils simple:

8a. Calyx with 2-3 scales at its base; male flowers with large bract

8b. Calyx without scales at base; bracts absent

... 2. Cucumis

6b. Anther cells straight or curved, not conduplicate:

7a. Male racemes stout; flowers 10-15 mm long, bright yellow; stamens 5; stilar disc absent

7b. Male racemes not stout; flowers 1-4 mm long, dull yellow; stamens 3; stilar disc cup-shaped

... 7. Melothria
I. ACTINOSTEMMA Griffith


Small, climbing herbs, with thin, slender branches. Leaves narrowly ovate to sagittately trilobed, 2-6 x 1-4 cm, emarginate, acuminate at apex, denticulate at margins, upper surface punctate-scabrid, lower surface glabrous; petioles up to 1 cm long, thin; tendrils filiform. Flowers small, white, monoecious, in axillary panicles. Male flowers many, 7-12 cm long; sepals 5, subulate, 1-nerved, 4-8 mm long; petals 5, lanceolate-caudate, 4-8 mm long. Female flowers solitary, ca 2 cm long; ovary subglobose, verrucose, 1-celled. Fruits ovoid-conical, 1.5-2 cm long, ca 1 cm thick, half superior, covered with rough points; seeds ovate, compressed, 10-12 x 7-8 mm, reticulate.

Fl. & Fr.: May-October.

Scarce, in dense forests. Kawnphai-Tuichang, K.P. Singh 94421.

2. CUCUMIS L.

1a. Fruits smooth
   1b. Fruits echinate... 2. C. melo


Elongated, branched, creeping herbs with angular-sulcate, hirsute stems. Leaves ovate, slightly trilobed, 4-7 x 3.5-6.5 cm, base cordate, acute at apex, margins denticulate, both surfaces hairy; petioles up to 4 cm long; tendrils simple. Fruits oblong, 3-3.5 x 1-1.5 cm, echinate; seeds 3-4 x 2 mm, obovate.

Fl. & Fr.: May-September.

Reported on the basis of H. Chakravarty (l.c.).

Robust, prostrate annuals. Leaves orbicular, reniform, 5-angular or moderately 3-7-lobed, base cordate, obtuse at apex, dentate at margins, villose or subhirsute on both surfaces; tendrils simple. Male flowers in fascicles; peduncles up to 3 cm long; calyx tube narrow, 5-6 mm long, villose; corolla lobes ovate-oblong, ca 2 cm long, yellow; staminal filaments short peduncles. Female flowers up to 2 cm long, hairy. Fruits polymorphous, with smooth surface; seeds white, oblong, 5-8 x 2 mm, compressed, obtuse at ends.

_Fl. & Fr.:_ July-October.

Common on ground in moist places along the road side nullabas in exposed condition. Kolasib, D.K. Singh 93143; Thingsat, K.P. Singh 97101.

_Uses:_ Fruits edible.

3. **COMPHOGYNE** Griffith


Weak, climbing herbs with slender branches and glabrous petioles. Leaves pedate, with serrate-dentate, lanceolate leaflets, membranous, acute at apex; petioles up to 5 cm long; middle leaflet 4-5 x 1-3 cm; lateral leaflet shorter; petiolules 2-5 mm long; tendrils 2-5 mm long, glabrous, filiform. Male racemes simple or branched; main rachis 10-30 cm long; calyx lobes up to 1.5 mm long; corolla lobes tri-nerved with entire margin, 2-3 x 1 mm. Female flowers in axillary fascicles or panicles, bracteolate. Fruits truncate, brown, costate, 8-14 x 7-12 cm; seeds sparsely tuberculate, dark-grey, truncate, 7-12 x 3-4 mm.

_Fl. & Fr.:_ September-November.

Climbing over bushes in shady forests. _S.l.c.,_ Weing 240 (slide C.E.C. Fischer, I.r.)

4. **GYNOSTEMMA** Blume

Slender, herbaceous climbers. Leaves pedately 3-7-foliolate; petioles up to 6 cm long; leaflets ovate-oblong, crenate-serrate at margins, acute at apex; middle leaflet 4-12 x 2-4 cm, lateral leaflets smaller, outermost leaflet very short; tendrils sulcate, simple to bifid, ± puberulous. Flowers dioecious, minute, greenish white; male flowers in panicles; peduncles branched from base to apex; branches divaricate, 5-12 cm long; bracteoles 1-2 mm long; calyx triangular, acute, 0.5 mm long; corolla subulate, up to 2.5 mm long, uninnerved, ciliate-denticulate at margins. Fruits globose, ca 7-9 mm thick, olive-green, glabrous; seeds compressed-ellipsoid, 2.5-3.5 x 2.5-3 mm, verrucose, yellowish.

Fl. & Fr.: July-October.

Thalthlang to South Vanlaiphai, Dutta 34014.

5. HODGSONIA Hook. f. & Thomson


Climbing shrubs, with robust, angular, glabrous stems, up to 30 m long. Leaves palmately 3-5-lobed, 15-20 cm across; lobes more or less deep, emarginate at base; acuminate at apex, both surfaces glabrous; petioles 4-7 cm long; tendrils robust, terete, bifid. Flowers tomentose. Male flowers in racemes; peduncles 10-25 cm long, bracteate; bracts fleshy, oblong, lanceolate; calyx tube 8-10 cm long, yellowish, mouth campanulate, lobes 5; corolla ca 5 cm long, yellow inside, white outside; lobes 5, 3-nerved, rotate, fimbriate. Female flowers solitary; peduncles short. Fruits reddish-brown, 12-grooved, 7-12 x 10-15 cm; seeds 3-6 pairs, flat, ellipsoid.

Fl. & Fr.: February-August.

Common, in tropical evergreen forests. Helie hills, Lunglei, Gage 101 (CAL); Aizwai, Parry 234 (fide C.E.C. Fischer, l.c.); Darzo to Leite, Dutta 34078; South Vanlaiphai, K.P. Singh 96860; Saithah, D.K. Singh 98826.

Uses: Silkworms are fed on the leaves.
6. LUFFA Miller


Extensive climbers. Leaves palmately 5-angled or lobed to various extent, up to 20 cm long, almost equally broad; lobes triangular, acuminate at apex, denticulate along margins, upper surface punctate hairy, lower surface sparsely hairy; pedicels 3-10 cm long; tendrils trifid. Flowers bright yellow, monoecious, male and female in the same axils. Male flowers in racemes, pedicels 8-12 cm long; calyx purple, broadly campanulate; lobes oblong-cuneiform, 2-3 x 1 cm, apex rounded; stamens 3, one unilocular; 2 bilocular, or five unilocular; filaments villous at base. Female flowers solitary, ovary cylindric, hairy. Fruits fusiform, 15-50 x 5-12 cm, not angular, obtuse, tubrous inside; seeds ovate, 10-12 x 8-9 mm, smooth, usually black; margins slightly winged.

*Fl. & Fr.* June-December.

Common, in forests at low elevations. Haoruan, 4 km from Lungleh, 670 m, Deb 31396; Tlaching, K.P. Singh 94298; Hinghial, 750 m, Maa 107036.

*Uses:* Young fruits eaten as vegetable.

7. *MELOTHRIA* L.

1a. Plants dioecious; fruits oblong

1b. Plants monoecious; fruits globose:

2a. Leaves scabrous; seeds acrobiolate

2b. Leaves glabrous; seeds smooth


*Fig. 135.*
Fig. 135: Melothria heterophylla (Lour.) Cogn.
Perennial, scandent herbs, with slender, subulate and glabrous branches. Leaves polymorphic, with a few minute glands at the base, undivided or trilobed to variously lobed, ovate, suborbicular, oblong or narrowly lanceolate, 5-18 cm long, base cuneate, acuminate at apex, dentilulate or rarely entire at margins; tendrils simple. Dioecious. Flowers small, yellowish-white; male flowers fascicled or umbellate; female flowers solitary; calyx tube campanulate, ca 5 x 3 mm, glabrous, subulate; corolla segments 5, ca 1.5 mm long, puberulous. Fruits oblong, 4-5 x 2-2.5 cm, subangular, red; seeds many, suborbicular, smooth, 5-7 x 4-5 mm, grey.

Fl. & Fr.: July-January.

Widely distributed in evergreen forests. Lungleh Road, Godfrey, 432 (CAL); North Vanalai, Deb 31148; D.K. Singh 93049; Sahiba-Bualpui, Dutta 33846; Serchip, D.K. Singh 93045; Leite, K.P. Singh 94089; Zote, K.P. Singh 94573; Thingsat, K.P. Singh 97102.

Uses: Roots, leaves and stems are eaten.


Creeping, annual herbs with hispid branches. Leaves ovate, angulate or 3-5-lobed, 3.5-12 x 2.5-10 cm, acute at apex, membranous, dentilulate along margins, upper surface scabrous; petioles 2-6 cm long; tendrils slender. Monoecious. Flowers solitary or a few fascicled; male flowers ca 4 mm across, yellow; calyx tube campanulate, ca 2 mm long, villous-hirsute; lobes subulate; corolla 2-4 mm long, yellow, deeply 3-partite; staminal filaments ca 5 mm long; female flowers yellow, calyx and corolla same as that of male. Fruits globose, 5-10 mm across, glabrous, haeceate, greenish, yellow to red; seeds grey brown, ovoid-oblong, ca 4 x 2 mm, prominently scrobiculate, compressed.

Fl. & Fr.: June-February.

Rather common in moist places on stones as creeper. Between Sonai and Sakaulim, Leslie, 36 (CAL); South Vanalai, Dutta 34057.

Climbers with slender, sulcate branches. Leaves undivided or rarely 3-5 angular, lobed, ovate-cordate, 2-5.5 x 1.5-2.5 cm, acute at apex, undulate-denticulate along margins, glabrous; petioles 2-3.5 cm long; tendrils slender, glabrous. Monoecious; flowers on long peduncles, peduncles of male flowers, 2-5 cm long, 5-10-flowered; calyx tube, campanulate, ca 1 mm long; teeth recurved; corolla lobes 2-3 mm long, ovate-oblong; female flowers solitary. Fruits globose, 8-10 mm across, finely reticulate; seeds marginal, 3-4 x 2-3 mm, brown, smooth, compressed.

*Fl. & Fr.:* June-December.

Rather common in evergreen forests. Thenzawl, K.P. Singh 93882; Saiyep forest, K.P. Singh 94153.

8. **MOMORDICA** L.

1a. Plants monoeious

1b. Plants dioecious


Small, much branched climbers, with puberulous or tomentose stems. Leaves up to 10 cm long and almost equally broad, reniform or suborbicular; both surfaces glabrous, deeply 5-7 lobed; lobes lobulate, sinuate-dentate; petioles up to 6 cm long, thin; tendrils simple, pubescent. Flowers yellow; male flowers solitary; peduncles glabrous; bracts foliaceous, 5-15 mm long, reniform or cordate; corolla slightly irregular, yellow, up to 2 x 1 mm; female flowers bracteate, peduncles 5-10 cm long; ovary fusiform. Fruits oblong, 8-20 cm long, large, muricate-tuberculate, trivalved, dehiscing apically; seeds compressed, ca 12 x 8 mm, tridentate at ends, sculptured on the surface.

*Fl. & Fr.:* June-October.
Fig. 136: Momordica charantia L.
Moderately common in moist places along road side forests. Thenzawl, near Mat bridge, K.P. Singh 93842.


Perennial climbers, profusely branched with slender stems and tuberous roots. Leaves ovate, 4-10 x 3-8 cm, base emarginate, mucronate at apex, membranous, entire or variously lobed with undulate or denticulate margins; tendrils simple, filiform. Dioecious; male flowers solitary; peduncles 4-12 cm long, bracteate at apex; bracts cuculate, sessile, sometimes ciliated; calyx lobes lanceolate, 5-7 x 2 mm, villous; corolla yellow, 2-3.5 mm long; peduncles in female flowers bracteate, up to 2.5 cm long; ovary ovoid. Fruits ovoid, 3-5 x 2-3.5 cm, papillose; seeds pale yellow, ovoid, 5-7 x 5-6 mm, emarginate.

*Fl. & Fr.:* June-October.

Common, in wild and also cultivated. Lawngtalai, Dutta 33760; Saiha, Dutta 33815; Bilkawthir, 500-600 m, K.P. Singh 93107; Pheileng and Lungshum, K.P. Singh 97080.

9. **Thladiantha** Bunge

1a. Male racemes bracteate; leaves simple

1b. Male racemes ebracteate; leaves simple to trifoliate


Large climbers, with sulcate, slender, villose stems. Leaves deeply cordate-ovate, undivided, 6-11 x 5-7 cm, subacute to acuminate at apex, denticulate at margins, rough above with cystoliths tipped with sharp points, villose beneath; petioles 4-5 cm long; base 5-nerved; tendrils simple. Flowers yellow, 3-5 cm across; male flowers in racemes with prominent, imbricating, ovate bracts. Calyx tube villous, campanulate, 6-8 mm long; lobes 8-10 mm
Fig. 137: Thladiantha cordifolia (Blume) Cogn.
long, villose; corolla campanulate, with 5-petals, 12-15 mm long; staminal filaments 2-3 mm long; female flowers solitary; ovary oblong, villous. Fruits oblong, 3.4-5.5 x 2-2.5 cm, longitudinally 12-15-nerved; seeds ovoid, 4-5 x 3 mm, both surfaces rugose.

_Fl. & Fr._: May-November.

Common, in moist and shady forests. Between ridge camp and Lungsin, 600-900 m, Gage 210 (CAL); Sairang road, Godfrey 505 (CAL); Champhai, Myanmar border, Deb 31029; Lungleh, Dutta 33361; Kawnpui-Hartawki Road, K.P. Singh, 93270; South Vanlaiphei, D.K. Singh 95864; Lungchhuan, D.K. Singh 99124.


Large climbers, with sulcate-angular, thin branches. Leaves simple or divided, ovate-cordate to digitately triplicate, 7-10 x 2.5-5 cm, acuminate at apex, membranous, margins denticulate, upper surface punctate, lower surface glabrous; petioles thin, 1.5-4 cm long; leaflets lanceolate, middle larger, 5-7 x 2-2.5 cm; lateral ones shorter, asymmetrically auriculate; tendrils simple. Flowers orange yellow; male flowers in racemes; peduncles 2-3 cm long, 4-5-flowered, puberulent; calyx campanulate, tube 3-4 x 2 mm; petals 10-12 x 3.5 mm; female flowers solitary or in few-flowered racemes; ovary oblong, fusiform. Fruits oblong-rounded, 3-3.5 cm; seeds ash coloured, _ca_ 6 x 5 mm, smooth.

_Fl. & Fr._: May-July.

Common, in evergreen forests along road sides. Saithah, D.K. Singh 98846.

10. **TRICHOŚANTHES L.**

1a. Calyx lobes entire 

1b. Calyx lobes dentate or laciniate:

2a. Undersurface of the leaves glabrous 

2b. Undersurface of the leaves tomentose 

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2.2. _T. tricuspidata var. tricuspidata_ 

2.1. _T. tricuspidata var. tomentosa_

Fig. 138.

Extensive climbers with tuberous roots. Leaves broadly cordate-ovate, 7-18 x 7-10 cm, acute at apex, membranous, entire to rarely sublobate, dentate-serrate at margins, petioles 3-6 cm long; tendrils 2-3-fld. Male flowers racemose, 4-8-flowered, orange to pale orange; peduncles stout 10-16 cm long; bracts villous; calyx tube ca 4 x 6 cm, attenuated, villous; corolla 5-lobed, papillose; female flowers subsessile, solitary; calyx and corolla same as in male flowers; ovary oblong. Fruits globose, red, smooth; seeds transversely broad, 10-12 x 4-6 mm, belted at the middle; belt with raised margins.

*Fl. & Fr.: June-December.*

Common, in moist places in evergreen forests. Thenzawl, K.P. Singh 93847; Leite, K.P. Singh 94096; Phairuang, K.P. Singh 94204; Saithah, D.K. Singh 98849.


Extensive climbers, with robust, branched, sulcate stems. Leaves palmately 3-5-lobed, suborbicular, cordate, 5-18 x 6-15 cm, lobes acuminate, denticulate, 3-5-nerved, glabrous or tomentose beneath; petioles 4-8 cm long; tendrils 2-3-fld. Flowers in racemes, peduncles of male flowers 15-30 cm long, 5-10-flowered; bracts villous; calyx tube ca 4-5 cm long, attenuated; corolla 5-lobed, papillose; staminal filaments 1-2 mm long; female flowers axillary, solitary; bracts fimbriate. Fruits globose, small, red with 10 longitudinal orange streaks; seeds ca 12 x 6 mm, ovate-oblong, both surfaces smooth.

Fig. 138: Trichosanthes cordata Roxb.
Fl. & Fr.: June-October.

Inside deep, shady forests. Champhai, K.P. Singh 94539.

2.2. var. tricuspidata

Fl. & Fr.: July-December.

Very common throughout the state. Lungleh, Dutta 33458; Tawipui, Dutta 33633; Riang, D.K. Singh 92964; Denglong forest, K.P. Singh 94139.

CULTIVATED SPECIES


Cultivated for vegetables in Jhum fields at lower elevations.


Cultivated in Jhum fallows at lower elevations.


Cultivated at lower elevations.


Grown in gardens, at lower elevations. Fruits are eaten as vegetable.


Cultivated in Jhum fields at lower elevations.


Cultivated in Jhum fields at lower elevations.


Cultivated in large quantities near Siphir. One of the common vegetables in Mizoram, it has single viviparous seed.


\textbf{BEGONIACEAE}

(K. Dilip Kumar)

\textbf{BEGONIA} L.

1a. Ovary 4-celled, capsules quadrangular, pyramidal, wingless

1b. Ovary 3-celled; capsules 2-3 winged:

2a. Leaf margin shallowly to deeply incised lobed:

3a. Flowers pinkish white; leaves 10.2-25 x 5.7-14 cm, sometimes with variegated blotches, pilose on upper surface, pubescent on the veins beneath

3b. Flowers rose to bright red; leaves large, 20-21 x 11-22 cm, deep green, not variegated, sparsely hairy above, glabrous beneath

2b. Leaf margin unlobed:

4a. Plants scapose;
5a. Leaves variegated, middle of the leaf irregularly very brilliantly silvery white; inflorescences numerous

5b. Leaves not variegated; inflorescence few:

6a. Female flower’s tepals 5 to 6

6b. Female flower’s tepals 3 to 4:

7a. Leaves equally cordate at base

7b. Leaves obliquely cordate at base

4b. Plants catapleant:

8a. Inflorescence on racemes

8b. Inflorescence on cymes or dichotomous cymes:

9a. Stems wiry; inflorescence weak

9b. Stems short or elongated; inflorescence not weak:

10a. Leaf margin double serrate:

11a. Inflorescence repeatedly dichotomous, many-flowered

11b. Inflorescence dichotomous cyme, usually few to many-flowered:

12a. Plants rough, short bristly hairy; leaves markedly symmetric

12b. Plants nearly glabrous; leaves asymmetric

10b. Leaf margin wavy in outline, unequally serrate to entire:

13a. Stem, leaves, flowers and ovary glabrous:

14a. Leaves very shallowly cordate to almost rounded at base

14b. Leaves strongly unequally cordate at base

13b. Stem, leaves, flowers and ovary not glabrous:
15a. Stem densely pubescent; leaf lamina symmetric, denticulate to entire along the margins; petioles hispid; inflorescence densely pubescent

15b. Stem sparsely pubescent; leaf lamina asymmetric, shallowly lobed to entire along the margins; petioles densely pubescent; inflorescence sparsely pilose


Rootstocks rhizomatous; rhizomes horizontal, jointed, 6-7 cm long, covered with scale leaves. Leaves asymmetric, opposite, broadly elliptic to ovate, 10-20 (1-25) x 8-11 cm, base cordate to strongly cordate, apex acute to acuminate, incised to entire along the margins with broad lobes, puberulous to pubescent on both surfaces; petioles equal to the length of leaves, 5-15 cm long, densely pubescent. Inflorescence ramiflorous, contracted, few flowered; bracts persistent. Male flowers: pedicels glabrous, 1-2 cm long, tepals 2 + 2, pubescent outside, outer larger, elliptic, inner smaller, elliptic-lanceolate; stamens numerous, monadelphous at base. Female flowers: tepals 5, outer pubescent, inner gradually smaller; ovary shaggy, 2-celled, 3-winged. Capsules dehiscing by an elliptic line round the face, 1-2.5 cm (including wings); seeds ellipsoid, brown.

*Fl. & Fr.:* August-March.

Common, in moist places. South Lushai hills, between ridge camp and Lungleh, 608-912 m, *Gage* 233 (CAL); South Lushai hills, near Fort Lungleh, 608-912 m, *Gage* 232 (CAL); Lushai hills, *Parry* 16 (CAL); Between Lingsim and Lungleh, South Lushai hills, 608-912 m, *Gage*, s. n. (ISIM); Lungleh, 912 m, *Gage* 233 (MH).


Acaulescent herbs; rootstock tuberous. Leaves asymmetric, radical, medium to large in size, chartaceous, ovate, 9-15 x 13-15 cm, base unequally cordate, apex acuminate to broadly acuminate, serrate to dentate-ciliate.
along margins, wavy in outline, upper surface very pale green to deep green with white spots, sparsely pubescent; petioles 5.5-13.5 cm long, pubescent; stipules persistent. Inflorescence dichotomous cyme, once dichotomous, spreading in appearance; peduncles ca 11.5 cm long, glabrous; flowers pale pink. **Male flowers:** tepals 2 + 2, yellow on drying, outer ovate to elliptic, inner elliptic; stamens numerous, monadelphous. **Female flowers:** tepals 5-6, sometimes 8, styles 3, stigma twistedly lobed; ovary 3-angled, 2-celled. Capsules red in colour, 3-winged; wings elliptic to ovate, one large, ca 3.2 x 2 cm, other two smaller, ca 3 x 10 mm.

**Fl. & Fr.:** August-October.

Ramlaitu, 912 m, *Parry 306* (CAL).


Acaulescent, tuberous herbs. Leaves symmetric, ovate to transversely ovate, 6-10 x 3-5 cm, base nearly equally cordate, apex acute to acuminate, transparent when dry, crenate to serrate along margins, glabrous on both surfaces; petioles 4.5-9.5 (-17) cm long. Inflorescence on scape, glabrous, 6-21 cm long; cymes usually few to many-flowered in bunch. Bracts ovate-oblong, caducous. **Male flowers:** tepals 2 + 2, outer large, ovate, ca 1.5 x 1 cm, glabrous, the 2 inner elliptic, ca 2.7 x 5 mm, glabrous; stamens shortly monadelphous; anthers obovate; connexives obscure. **Female flowers:** tepals 2 + 1, outer large, inner smaller, lateral; ovary glabrous, 2-celled; styles 3, nearly separate at the tip into curved branches; stigma twisted. Capsules obovoid, 4-10 x ca 6 mm, 3-winged, nearly equal, upper margin of the wing horizontal.

**Fl. & Fr.:** July-September.

Hmuifung, 1500 m, *Parry 45, 46, 47* (*fide* C.E.C. Fischer, *l.c.*); 60 miles South of Lunshe, 1350 m, *Wenger 320, 60* (*fide* C.E.C. Fischer, *l.c.*).

Perennial, caulescent herbs, 30-40 cm high; rootstock rhizomatous, subwoody; stems terete, brownish red, branched, glabrous. Leaves ± asymmetric, ovate to elliptic, 12-18(-25) x 3.7-8 cm, base very shallowly cordate to almost rounded, apex acuminate, unequally serrate to entire along margins, membranous or less transparent when dry, upper surface glabrous; petioles glabrous 1.2-5.3 cm; stipules persistent. Inflorescence peduncled; peduncles axillary, 9-17 cm long, glabrous, bearing a few flowers terminally, bracts persistent. Male flowers: tepals 2 + 2, outer small, ca 10 x 5 mm, glabrous, pinkish to whitish; stamens free, numerous, very shortly monadelphous. Female flowers: tepals 2 + 3, outer larger, inner gradually smaller, white; styles 2, united at base; stigma terminal; ovary glabrous, 2-celled. Capsules ca 3 x 1.5 cm (inclusive of the larger wing, 2.5 x 1.7 cm.) other 2 wings narrow, papery, often recurved in fruit; seeds narrowly ellipsoid.

Fl. & Fr: June-November

Lungleh, 1216 m, Parry 90 (Sede C.E.C. Fischer, l.c.); Sairang road, Godfrey 504 (CAL). Sait Thu, D.K. Singh 92945.


Caulescent herbs; stems 20-30 cm long, sparsely puberulous, succulent. Leaves asymmetric, alternate, ovate to elliptic, 4-6 x 2.3-6 cm, base unequally subcordate, acuminate to cuneate at apex, serrate to sinuate dentate along margins, veins puberulous above, prominent, densely pubescent, beneath; petioles of upper leaves 0.5-1.2 cm long, of lower leaves 2-4 cm long, pubescent; stipules 2, adnate, lanceolate. Inflorescence racemose, contracted, small to medium; flowers bright pink, bracts 2, opposite, pubescent, ovate-lanceolate; male flowers blooming at the top of inflorescence and female flowers below. Male flowers: bracts enclosing flowers in bud condition, upper surface densely pubescent; tepals 2, broadly elliptic; stamens 12-18, monadelphous, anthers oblong to elliptic, connate obscure. Female flowers: tepals 3 + 2, the 3 larger rounded to elliptic, ca 2 x 1 cm; ovary elliptic-oblong, 3-winged with one larger wing and 2 smaller wings, 3-loculed; styles 3, connate at base, upper divided into three; stigma
Fig. 139: *Begonia halecoa* Ham. *ex* D. Don
lunate. Larger wing of capsules ca 1 x 7 mm, smaller wing 1.2 x 0.5 cm; seeds ellipsoid, brown.

*Fl. & Fr.:* July-September.

Lushai hills 1300 m, *Parry, s.n.* (fide C.E.C. Fischer, *l.c.*); Thenzawl, K.P. Singh 93883; Thenzawl-Serchip road, K.P. Singh 93898.


Rhizomatous, caulescent herbs; stems erect, branched, glabrous, pale green; 12-60 cm long when well developed. Leaves ovate to broadly ovate, 11-15 x 7-12 cm, base strongly unequally cordate, apex acuminate, shallowly lobed to entire or undulate along margins; glabrous on both surfaces, petioles unusually glabrous. 4-11 cm long, stipules 2, persistent. Inflorescence peduncled; peduncles axillary or terminal, elongated, glabrous, 11-18 cm long; cymes not very many-flowered, 1 to 2 times dichotomous; bracts large, oblong, deciduous. Flowers large, pinkish white. Male flowers: tepals 2 + 2, outer large, ovate, ca 10 x 8 mm, inner small, elliptic, 7 x 4 mm, pink; stamens ± 50, monadelphous; anthers ovoid, connectives obscure. Female flowers: tepals 5, nearly equal in size, white; styles 2, connate at base with long tortuous branches; ovary glabrous, 2-celled. Capsules becoming inflated, 3-winged, ca 2.9 x 1 cm (including the larger wing 2 x 1.2 cm), smaller wing 3 mm and often recurved in fruit, the broad wing deciduous, upper edge concave; seeds ellipsoid to ovoid.

*Fl. & Fr.:* April-December.

Recorded on the basis of C.E.C. Fischer (*l.c.*).


Acaulescent herbs with rhizomatous rootstock. Leaves asymmetric, radical, one or more leaves arising from rhizome, ovate, ca 20 x 15 cm, base obliquely deeply cordate, apex acuminate, minutely serrate to dentate, ciliate along the margins, densely pubescent; petioles highly elongated, ± 30 cm long, densely pubescent to tomentose. Inflorescence peduncled; peduncle
6-8 cm long. Male flowers with 4 tepals; ovary 2-loculed. Capsules subquadrate, one wing narrow, dehiscing laterally.

*Fl. & Fr.*: October-December.

In moist shady places, Zotethlang, K.P. Singh 94594.


Rhizomatous herbs, creeping; stems hard, brown-red, first erect then procumbent, jointed, more or less brown tomentose, 14-40 cm long. Leaves asymmetric, broadly ovate to transversely ovate, 10.2-25 x 5.7-14 cm, base very shallowly cordate to obliquely cordate, acutely lobed, incised up to half of the leaf; lobes laciniate, ca 3 cm long, variegated, chartaceous, scabrous to pilose on upper surface and pubescent on the veins beneath; petals pink, pubescent to tomentose, 4.2-16 (-23) cm long; stipules persistent. Inflorescence peduncled; peduncle axillary, puberulous or tomentose, 4.2-16 cm long; cymes usually few-flowered. Flowers pink to white-purple; bracts persistent. *Male flowers:* tepals white-purple, 2+2, outer long, elliptic, inner narrowly obovate; stamens 50 to numerous, in a globose mass; filaments nearly free. *Female flowers:* tepals 4-5, inner gradually smaller, elliptic; styles 2, divided from the base into 2, much twisted branches; ovary 2-celled, pubescent. Capsules with one larger wing and two narrow wings, 2.2-2.5 x 1.2-1.9 cm (including larger wing 1.5 x 1 cm), small wings often recurved in fruit; seeds ellipsoid to ovoid.

*Fl. & Fr.*: August-September.

Common, in moist places. Sairep forest, K.P. Singh 94144, 94151; Near Hliapui, K.P. Singh 94306.


Caudescent, subwoody herbs, 25-30 cm high with tuberous or elongated rootstocks; stems erect, somewhat flexuose, often branched, succulent, puberulous, distichous, sometimes bulbiliferous in leaf axils above. Leaves
Fig. 140: Begonia palmata D.Don
asymmetric, ovate-lanceolate to oblong-lanceolate, 3.9-10 x 1-3.5 cm, base unequally cordate, acuminate at apex, transparent when dry, double serrate to finely serrate-dentate along the margins, upper surface scarcely pubescent; petioles 0.4-3 cm long, puberulous or sparsely pubescent; stipules persistent. Inflorescence peduncled; peduncles both axillary and terminal; cymes usually many-flowered, repeatedly dichotomous; bracts persistent, ovate, ciliate. Male flowers: tepals 2 + 2, outer ca 10 x 9 mm, inner ca 10 x 7 mm; stamens yellow, 10-25. Female flowers: tepals 4-5 persistent, inner smaller, ovary 3-celled, styles 3, nearly separate at the tip into curved branches, stigma capitate. Capsules 3-winged, ca 7 x 4 mm, one ascending wing, 2 smaller wings; seeds short, ellipsoid.

Fl. & Fr.: June-November.

Lumui, 600 m, Parry 43.44 (s.l. C.E.C. Fischer, l.c.).


Cauliscent, tuberous herbs; body rough with short bristly hairs; stems erect, herbaceous, often branched, glabrous or obscurely pubescent. Leaves markedly symmetric, often variegated, ovate, 3-15 x 2.5-11. 6 cm, base ± equally cordate, apex acuminate, doubly finely serrate along the margins; petioles hairy, 2-7.5 cm long. Inflorescence peduncled; peduncles both axillary and terminal, densely pubescent; cymes usually many-flowered; bracts persistent. Male flowers: tepals 2 + 2, outer pubescent, ovate, inner obovate, pubescent to glabrous; stamens ± 50, forming a globose mass. Female flowers: tepals 5, outer large pubescent, inner one smaller in size; styles 3, nearly separate, divided halfway into two branches; stigma covered with hairy papillae; ovary densely pubescent, 3-celled, 3-winged. Capsules large, usually pubescent, one wing larger, other two wings smaller; seeds light brown, oval or round.

Fl. & Fr.: January-December.

Recorded on the basis of C.E.C. Fischer (l.c.).

Aculeolate herbs; rhizomes short, thick. Leaves large, unequally cordate, 25-28 x 20 cm, base deeply two lobed, acuminate at apex, sinuate or coarsely dentate along the margins; petioles round, longer than leaf, 4-15 (-30) cm long, sparsely white hairy to densely pilose; stipules sprinkled with long, woolly, white hairs outside. Inflorescence numerous, scarcely rise above the leaf; peduncles round, glabrous, 10-23 cm long, almost erect; cymes few-flowered, twice dichotomous; flowers large, rose coloured, glabrous. Male flowers: tepals 2 + 2, outer ovate, inner elliptic, narrow below the middle; stamens 60-80, united at the base. Female flowers: tepals 5, the 3 outer ones half narrow as those of the male flowers; styles bifid, glabrous; stigma short, twisted, papillae band spirally twisted, continuous below. Capsules 3-winged, 2 wings narrow, parallel to the capsule; seeds ellipsoid to ovoid.

Fl. & Fr.: March-December.

Thonsawl, 1200 m, Purdy 253a (slide C.E.C. Fischer, l.c.).


Aculeolate herbs with subterranean stout rhizome; stems erect with red streaks, often branched. Leaves opposite, asymmetrical, broadly ovate, 9-17.5(-23) x 5.2-13.5 cm, base unequally cordate to strongly cordate, apex acuminate, obscurely serrate along the margins, minutely pubescent on both surfaces on veins, densely pubescent in young leaves; petioles 2.5-5 cm long; stipules persistent or macrescent. Inflorescence peduncled; peduncles axillary, glabrous, red or pink; cymes usually few-flowered, 3 or more times dichotomous; bracts persistent. Male flowers: tepals 2 + 2, outer white, deeply concave, almost hemispherical in outline, inner somewhat narrow, white, concave with semicircular margins; stamens ± 50, clustered in a subglobose bundle. Female flowers: densely covered with minute, brown, glandular hairs; tepals 4 to 5, on dorsal surface densely covered with minute hairs, the outer tepals irregularly oval in shape, inner tepals oval-oblong; styles 4, 2-fid nearly from the base forming continuous spiral bands; stigma branched, stigmatic papillae make a continuous helical band with several turns; ovary quadrangular, pyramidal, 4-celled, fleshy, wingless and minutely horned at the angles; placentae twice divided; seeds ovoid to round.
Fl. & Fr.: August-February.

Rather common, in moist places. Kauwlir, 1800 m, Parry 186 (fide C.E.C. Fischer, l.c.); Hmuiuflang, 1500 m, Parry 264 (fide C.E.C. Fischer, l.c.); Tithlung, K.P. Singh 94062.


Rootstocks rhizomatous; stems 15-20(45) cm long, erect, often branched, hard, green in colour, glabrous. Leaves asymmetric, ovate to broadly ovate to suborbicular in outline, 20-21 x 11-55 cm, base shallowly cordate, transparent when dry, deeply incised into irregular lobes, sometimes divided almost up to the base, lobes 0.10 cm long, apex acuminate, serrate to dentate along the margins, upper surface scarcely hairy, lower surface glabrous; peltiotes 5.5-10 cm long, glabrous; stipules 2, persistent, inflorescence peduncled; peduncles both axillary and terminal, glabrous, ca 15 cm long; cymes usually few-flowered, dichotomous. Male flowers: tepals 2 + 2, 2 outer ovate, inner smaller, elliptic; stamens 2-5; monadelphous. Female flowers: tepals 3, inner bright red, gradually smaller; styles 2, connate at base, bifid, branches tortuous; ovary glabrous, 2-celled. Capsules 3-winged, often recurved in fruit, the broad wing much decurrent with its upper edge concave; seeds ovoid to round.

Fl. & Fr.; August-November.

North Vanlaiphai, 1500 m, Parry 253 (fide C.E.C. Fischer, l.c.).


Herbs with nodular rootstock and fibrous, wiry adventitious roots; stems 10-25 cm long, weak, glabrous or glandular-pubescent, sometimes rooting at lower nodes. Leaves alternate, ovate, obliquely cordate, apex acute or shortly acuminate, crenate-dentate along margins; petioloies ca 1.1 cm long; stipules small, ovate, glabrous. Inflorescence peduncled, in terminal, dichotomous cymes; peduncles 4.5-7 cm long, dentate, weak, dichotomously
branched, sometimes glandular-pubescent. Flowers small, white, sometimes with pinkish tinge; bracts small, persistent. Male flowers: tepals 2 + 2, outer free, broadly ovate, inner smaller than the outer tepals, narrowly ovate, stamens 8-13, monadelphous; anther obovoid. Female flowers: tepals 5, united at the base, unequal, 3 larger, broader, obovate, 2 narrower, lanceolate, ovary glabrous, 3-celled; styles 3, radiating from the base, stigma lunate. Capsules glabrous, wings 3, subequal, 2 ovate-lanceolate, 1 oblong, slightly shorter; seeds small, ellipsoid.

Fl. & Fr.: August.

Six miles from Sairang road, Lushai hills, Godfrey 503 (CA1.)

Note: Begonia surculigera Kurz and Begonia wengeri C.E.C. Fischer were treated as distinct species in the literature. However, the critical investigation on the type specimens of B. wengeri revealed it to be conspecific with B. surculigera in almost all the characters. Hence the former is merged with the latter.


Fig. 141.

Caulescent, rhizomatous herbs; stems short, subwoody, covered with scale leaves, densely pubescent. Leaves symmetric, ovate, 7-19 x 5.5-9 cm, base obliquely cordate, acuminate at apex, denticulate to entire along margins, puberulous to pubescent on both the surfaces; petioles hispid, 3-12 (-20) cm long; stipules persistent. Inflorescence peduncled; peduncles both axillary and terminal, hairy, 4-6 cm long; cymes usually few-flowered, medium sized, densely pubescent; bracts present. Male flowers: tepals 2 + 2, the 2 outer ovate, the 2 inner narrowly obovate; stamens 8-13, scarcely monadelphous. Female flowers: outer tepals pubescent, inner gradually smaller; ovary 2-celled. Capsules recurved in fruit with a decurrent wing, dehiscing by four lines on either side of the two narrow wings; seeds ellipsoid to ovoid, brown.

Fl. & Fr.: August-October.

Scarce, in moist patches. Tipaimukh area near Bridge, K.P. Singh 97124.
Fig. 141: Begonia thomsonii A. DC.

Rhizomatous herbs, 10-15 cm high, puberulous; rhizomes short. Leaves large, ovate, cordate, 6-10 x 5-8 cm, apex acute, double serrate along margins; petioles 9-14 cm long. Flowers both axillary and terminal, rose coloured. *Male flowers*: tepals 2 + 2, outer large, ovate rotundate, inner small, obovate. *Female flowers*: tepals 3 + 1, the 3 larger, 1 smaller, elliptic. Capsules 3-winged, pubescent; wings one larger and two smaller, 2-loculed, placentas baccate.

*Fl. & Fr.*: September-October.


Recently J.H. Lahramnghinglova (*Ethnobotany* 11: 39. 1999) reported *Begonia infausta* C.B. Clarke as the new ethnobotanical record from the state. The suspension of the plant, boiled with *Engelhardtia spicata* Leschen. ex Blume, is taken to cure piles and dengue.

**MOLLUGINACEAE**

(K.P. Singh)

1a. Flowers in axillary fascicles; seeds appended with a white thread curved round them........................................... 1. *Glinus*

1b. Flowers in terminal cymes; seeds not appended....................................... 2. *Mollugo*

1. **Glinus L.**

1a. Stellate hairy herbs............................................. 1. *G. lotoides*

1b. Glabrous herbs.................................................. 2. *G. oppositifolia*


Annual herbs, stellately hairy, prostrate, 15-70 cm long, greyish green. Leaves opposite or falsely whorled, almost orbicular or obovate, 1-2 x 0.6-1 cm, base cuneate, obtuse or spiculate at apex. Flowers in axillary clusters,
subsessile, 1-6 together; sepals 5-8 mm long, acute, with many white hairs, often woolly; petals absent, stamens 3-many. Capsules 5-valved, shorter than sepals, ovoid, seeds tuberculate, brown, strophioleate, ca 8 mm long.

Fl. & Fr.: Throughout the year.

Not very common, Nawalzawl, Deb 3429 (CAL).


Erect or ascending, much branched, annual herbs, sometimes prostrate, up to 40 cm long. Leaves opposite or in false whorls of 3-5 of which usually 2 larger than others, oblong-obovate, spatulate, 1-2.5 x 0.3-0.5 cm, base tapering, acute or cuspidate at apex, glabrous, subsessile. Flowers white, in axillary fascicles of 2-5, long pedicillate, ca 1 mm long; sepals 5, obtuse at tips, 3-5 mm long, glabrous; petals absent. Capsules ellipsoid, little shorter than sepals, 3-4 x 2 mm, 3-4-valved; seeds many, subreniform.

Fl. & Fr.: Throughout the year.

In rice fields and ditches. Tetrai, 250 m, M. Sarmitana 101741.

2. MOLLUGO L.


Annual herbs, main branches erect or prostrate, stems 10-25 cm long with profusely branched, glabrous branchlets. Leaves in false whorls of 3-9, lower ones rosulate, upper linear-lanceolate or obovate or elliptic, 1-4.5 x 0.2-1 cm, base cuneate, acute at apex, entire along margins, apiculate; petioles up to 2 mm long. Cymes leaf-opposed or terminal, polytophial, up to 5 cm long. Flowers white or pale, ca 2 mm across; sepals 5, elliptic, ovate-oblung, ca 2 mm long, white or whitish; petals absent; stamens 3.
Fig. 142: Glinus oppositifolia (L.) A. DC.
Fig. 143: Mollugo pentaphylla L.
Capsules oblong, faintly 3-lobed; seeds 15-20, estrophiolate, dark brown, reniform, prominently granulate.

*Pf.* & *Fr.* Throughout the year.

*S.lac.*. *Parry s.num.* (CAL); Mizo hills. *Dutta 33270.*

**APIACEAE**

(D.K. Singh)

1a. Flowers in capitulate heads; leaves spinous toothed

1b. Flowers in simple or compound umbels:

2a. Umbels simple:

3a. Slender to stout, erect herbs; leaves compound, 3-5 parted

3b. Low creeping herbs; leaves undivided:

4a. Leaf bases sheathing; mericarps 7-9-ribbed

4b. Leaf bases not sheathing; mericarps 3-ribbed

2b. Umbels compound:

5a. Leaves simple with entire margins, linear-lanceolate or broadly ovate

5b. Leaves simple or compound, variously divided when simple:

6a. Plants marshy; fruits with corky ridges; calyx teeth prominent

6b. Plants not marshy; fruits with ridges corky or not corky; calyx teeth prominent or not prominent:

7a. Secondary ridges of fruits prominent; fruits hirsute or setose

7b. Secondary ridges of fruits inconspicuous; fruits glabrous or pubescent:

8a. Fruits laterally compressed, obscurely winged; vittae 2-3 at maturity

8b. Fruits ± dorsally compressed or strongly flattened:
9a. Fruits with all the ridges equally or unequally winged, globose or subquadrates … 10. *Selenium*

9b. Fruits with dorsal ridges filiform or obsolete; lateral ridges broadly winged, obovate … 5. *Heracleum*

1. **Bupleurum L.**


Erect, perennial herbs, 30-90 cm high, with a thick rootstock; stems usually solitary or several, sometimes profusely branched upwards. Leaves linear, lanceolate-oblanceolate, 5-13 x 0.2-1.5 cm, narrowed at the base, subulate, mucronate at apex. Umbels terminal, 3-8-rayed; flowers white-yellow; bracts 1-4, lanceolate or obovate-lanceolate; bracteoles 4-5, obovate-lanceolate, exceeding the umbellules; calyx teeth absent; petals with strongly incurved tips. Fruits broadly oblong, yellowish brown, subcompressed, with prominent primary ribs, furrows 1-vittate.

*Fl. & Fr.:* June-January.

Sherkor (?), *Lorinum s.latum* (Fide C.E.C. Fischer, l.c.); North Vañnaipallai, Deb 31152 - Identified and published as *B. macronatum* Wight & Arn. by Deb & Dutta (l.c.). Reidentified on sheet as *B. hamiltonii* Balakr. by Dr. P.K. Mukherjee.

2. **Centella L.**


Prostrate herbs, with perennial rootstock; stems creeping, rooting at nodes, puberulous. Leaves in rosettes, orbicular-reniform, 1.2-5 cm across, base cordate puberulous, crenate-dentate or lobulate along margins, petioles
Fig. 144: *Centella asiatica* (L.) Urban
1-15 cm long. Umbels 1-7 several at a node with 2, ovate-lanceolate bracts; flowers purplish red, 3-5 per umbel, subsessile or sessile; calyx lobes 5, triangular; petals 5, ovate, acute or obtuse, imbricate. Fruits laterally compressed, dorsal ribs 7-9, with the secondary ridges as prominent as the primary, vitice absent; mericarps c.2 x 2-3 mm.

Fl. & Fr.: April-November.

Common, in moist places under shade. North Vanlaiphai; D.K. Singh 93312; Kawnpui, K.P. Singh 97011; Phongpui, K.P. Singh 96846.

Uses: Plant extract used for treating anaemia and stomach ailments.

3. DAUCUS L.


Annual, hispid herbs; stems 0.3-1.2 m. Leaves 2-3 pinnate; pinnate pinnatifid, ultimate segments small, c. 1 mm wide, narrow-lanceolate with acute apex. Umbels compound; rays numerous, outer rays connivent; bracts numerous; pinnate; bracteoles numerous, 3 1/2, simple; calyx teeth small; petals white, obovate, retuse, outer often radiant. Fruits elliptic, terete or ± dorsally compressed, ridges prominent, bristly; bristles of secondary ridges as broad as the fruit, 1-vittate.

Fl. & Fr.: December-May.

Cultivated. Vawmbuk to Thalhlang, Dutta 33931.

4. ERYNGIUM L.


Diffused, perennial, toetid herbs, with fusiform roots; stems dichotomously branched, deeply striate. Leaves simple, obovate-lanceolate-spachulate, 5-10 x 0.6-2.5 cm, spinous-toothed at margins, alternate at base; floral leaves palmatipartite. Flowers white, in oblong-cylindrical umbels;
Fig. 145: Eryngium foetidum L.
bracts spinulose, stellate-pubescent; calyx teeth rigid, acute; petals white. Fruits ellipsoid.

_Fl. & Fr.:_ May-February.


**5. HERACLEUM L.**

1a. Leaflets thickly white tomentose, 5-15 cm long; rays 10-40; fruits 5-11 x 3-6 mm

1b. Leaflets not white tomentose but hairy, 2.5-8 cm long; rays 6-12; fruits 5-6 x 4-5 mm

---


Erect herbs; stems 0.6-1.2 m, villous. Lower leaves 1-2 pinnate, pubescent, upper leaves 3-partite; leaflets cordate, ovate-lanceolate 2.5-8 cm long, serrate. Umbels compound; rays 6-12, up to 4 cm long; bracts 5-8, lanceolate; bracteoles 5-10. Flowers white; calyx teeth small, linear; petals obovate, emarginate, 2-fid. Fruits obovate, 5-6 x 4-5 mm; ridges 2-vittate.

_Fl. & Fr.:_ July-January.

Phongpui, 1500 m, Parry 527 (fide C.E.C. Fischer, _l.c._).


Erect herbs; stems 0.6-2 m tall, hollow, almost glabrous. Leaves bipinnate; leaflets 5-15 x 4-8 cm, obtusely lobed, crenate-serrate at margins, thickly white tomentose or villous on both surfaces. Umbels compound; rays 10-40, up to 10 cm across; bracts 1-3, 5-10 mm long, linear or absent; bracteoles ca 5 mm long, linear. Flowers white; calyx teeth linear; petals obovate. Fruits obovate, pale brown, compound, 5-11 x 3-6 mm, bifid; ridges 2-vittate.
Fl. & Fr.: July-December.

Mizo hills, Thaitlang, Dutta 33943.

6. HYDROCOTYLE L.


Prostrate, perennial herbs; stems succulent, rooting at nodes; branchlets erect, flexuous, pubescent. Leaves simple, round-cordate, reniform, 2.5-7.5 cm across, coriace, subentire or 7-8-lobed, glabrous; petioles 12-18 cm long, laxly pubescent; stipules broadly ovate. Umbels many-flowered, simple, terminal or leaf-opposed; bracts minute, scattered along the pedicels, ovate-lanceolate; bracteoles numerous. Flowers ca 1 mm across; calyx teeth minute; petals 5, entire, greenish-white, lanceolate-valvate. Fruits orbicular-broadly ovoid. reticulate-rugose, laterally compressed; vittae absent; mericarps ca 1 x 1 mm, reddish-brown.

Fl. & Fr.: November-April.

Very common inside forests and along road side nallas, in moist places under shade. Phongpui, 2300 m, Parry 143 (CAL); Linchong-Demagiri, 150-950 m, Gage 234 (CAL); Kolasib, Godfrey 542 (CAL); Sairep, K.P. Singh 94147; Tithlang, K.P. Singh 94076, 94184; Kawnpui forest, K.P. Singh 96992; South Vanlaphai, D.K. Singh 96889, 96890; Saithah, D.K. Singh 98845; Rulchawn, M. Sawmliana 99283.

7. Oenanthe L.

Perennial, marshy, stoloniferous, glabrous herbs; stems up to 1 m long, decumbent, finely striate, often floating. Leaves 1-2 pinnate or trifoliate; petioles 4-10 cm long; leaflets elliptic-lanceolate or rhomboid, 1.5-3 x 0.6-1.5 cm, acute at apex, serrate-lobed along margins. Umbels terminal or leaf-opposed, compound; peduncles 10-20 cm long; rays 4-30, 1-2 cm long. Flowers white; calyx-teeth small; petals emarginate. Fruits subquadrate-ellipsoid; lateral ridges large, 1-vittate.

Fl. & Fr.: August-February.

Hillaupui, 1400 m, K.P. Singh 94337, 94390.

8. PIMPINELLA L.


Erect, annual-perennial herbs, up to 1.5 m high; stems distally corymbose; branches villous, subtomentose, or scarcely pubescent. Leaves 3-5-foliolate; leaflets linear-laciniate or subpinnatifid, 2.5-7.5 x 1.2-2.5 cm, serrate or laciniate, base cordate. Umbels 6-12-rayed; bracts linear, 1-2, or sometimes absent; bracteoles 8-3, or absent. Flowers greenish white; petals retuse. Fruits ovoid, laterally compressed, hispidulous, papilllose-rugose, or glabrescent; ridges obscure, 2-3 vittate.

Fl. & Fr.: July-October.

Champhai, 1500 m, Parry, 24 (sive C.E.C. Fischer, l.c.).

9. SANICULA L.


Erect, perennial herbs, 0.3-1 m high, with more or less creeping rhizomes. Leaves palmately 3-5-partite or lobed, orbicular, 4-8 cm long, 5-12 cm across, glabrous, mucronate-serrate at margins; petioles 2.5-18 cm long. Umbels irregularly compound, rays few, divaricate; bracteoles linear.
Flowers white; calyx teeth lanceolate; petals emarginate. Fruits echinate, ovoid, ca 3 mm long, slightly compressed laterally, densely covered with hooked bristles; ribs obscure, 1-vittate.

Fl. & Fr.: November-March.

Thalithang, Dutta 33907, 33932.

10. SELINUM L. (nom. cons.)


Perennial, branched herbs; stems 0.3-1.2 m, glabrous, frequently with many withered fibres at the base. Leaves oblong-lanceolate, or ovate, 10-20 cm, 3-4 pinnate; leaflets 1-2 pinnatifid, narrow, linear-lanceolate; petioles 1-12 cm long. Umbels axillary, compound, rays 10-15, glabrous or obscurely pubescent; bracts 4-6, linear, bracteoles 4-8, linear, laxly serrate. Flowers white; calyx teeth linear, oblong, twice as long as broad. Fruits 2-3 mm across, subquadrate, dorsally compressed; ridges subequally winged, 1 vittate.

Fl. & Fr.: June-December.

Along the forest edges in shady places. Leite, Dutta 34107.

ARALIACEAE

(D.K. Singh)

1a. Leaves pinnately compound, petals ± imbricate in bud

1b. Leaves simple, palmately lobed or digitately compound; petals valvate in bud:

2a. Ovary 2-celled:

3a. Unarmed shrubs; pedicels distinctly articulate

3b. Prickly shrubs; pedicels inarticulate

2b. Ovary 5-12-celled:
4a. Leaves digitately compound

4b. Leaves simple or palmately lobed:

5a. Unarmed, climbing shrubs; leaves simple or 3-5 angled; ovary 5-celled

5b. Armed, erect shrubs or trees; leaves palmately lobed; ovary 7-12-celled

...3. Hedera

...6. Trevesia

1. ARALIA L.

1a. Plant parts glabrous

1b. Plant parts scabrid-brown tomentose:

2a. Leaves pilose-hairy on both surfaces; panicles ebracteate, up to 45 cm long

2b. Leaves scabrid above, brown tomentose below; panicles ebracteate, up to 1.5 m long

...1. A. arnata

...3. A. thomsonii


Prickly shrubs or small trees, 4-7 m tall. Leaves very large, 1-4 pinnate; rachis prickly, with a pair of leaflets at each division; leaflets ovate-lanceolate, 7-12 x 1.5-5 cm, rounded or cordate at base, acuminate at apex, bristly serrulate along margins, pilose or hairy on both the surfaces; petioles hairy, short. Umbels in terminal panicles; panicles up to 45 cm long, upper part pubescent; bracts usually absent. Flowers whitish or greenish yellow. 2-3 mm across. Fruits subglobose, ca 4-5 x 3 mm, conspicuously 5-angled, glabrous, purplish-black when ripe.

Fl. & Fr.: September-February.


Large, lax, prickly shrubs or small trees; branches more or less glabrous; prickles short, strong, spreading. Leaves large, up to 1.5 m long, pinnately
Decomposed, with a pair of leaflets at each division of rachis; rachis glabrous; prickles 0.8-1 cm; leaflets on ultimate pinnules, 5-9, oblong, or ovate-lanceolate, 5-8 x 2.5-3.5 cm, base cordate rounded, caudate-acuminate, or acuminate at apex, serrulate along margins, glabrous, with needle spines at base; lateral pinnules up to 2 mm long. Panicles very large, 0.6-1.2 m long; bracts narrow-oblong, or oblong lanceolate, persistent, membranaceous. Flowers creamy-greenish, ca 3 mm across; calyx glabrous, with distinct teeth; petals valvate, ovate. Fruits with 5-ridges, 2-3 mm long.

*Fl. & Fr.*: January-December.

Sairep, 1500 m, Parry 476 (*fide* C.E.C. Fischer, l.c.); Darzo, 1500 m, Parry 594 (*fide* C.E.C. Fischer, l.c.).


Large, prickly, usually unbranched shrubs, up to 5 m tall, softly villous, or fulvis tomentose; bark brownish; prickles short, strong, weaker on pinnae. Leaves large, 1-2 m long, 2-3 pinnate, with a pair of leaflets at each node of rachis, ultimate pinnules 5-9-foliolate; leaflets elliptic-ovate, or ovate-lanceolate, 5-10 x 1.5-4 cm, base rounded subcordate, acuminate at apex, obscurely serrulate along margins, scabrid above, tomentose beneath. Panicles compound, 30-45 cm long or sometimes equalling the length of leaves, tomentose; umbels 15-20-flowered; bracts ovate-lanceolate, tomentose. Flowers greenish-yellow, 2-2.5 mm across; pedicels up to 1 cm long; calyx glabrescent, with distinct teeth; petals ovate. Fruits globose, ca 4 x 3 mm, deeply 5-ribbed.

*Fl. & Fr.*: February-September.

Rather common in evergreen forests. Lawngtalai, Dutta 33777.

2. **BRASSAIOPSIS** Decne. & Planchon

Small trees, 3-10 m tall; young parts prickled, rusty stellate-tomentose; bark grey or greyish brown; prickles blunt. Leaves digitate, with 5-8 leaflets; leaflets elliptic-lanceolate, or oblong, ovate-lanceolate, 10-20 x 3-8 cm, base rounded or acute, acute-short acuminate at apex, entire or obscurely serrate along margins, stellate-tomentose above, glabrescent beneath; petiolules up to 5 cm long. Panicles large, terminal, 20-30 cm long, rusty-tomentose; umbels compound; bracts oblong-lanceolate, persistent. Flowers small, 4-5 mm across, white, stellate tomentose. Fruits globose or subglobose, 0.5-0.8 cm across, crowned by the disk and persistent styril column.

Fl. & Fr.: August-May.

In evergreen forests, 15 miles S.E. of Lungleh, Gage 156 (CAL); Lungleh to Sairep, Duna 33510.

3. HEDERA L.


Large, evergreen, scendent shrubs, adhering to large tree trunks by means of extra axillary rootlets, unarmed; bark slightly rough, white-pale brown; young parts and inflorescence tomentose. Leaves simple, alternate, polymorphic, ovate-elliptic, elliptic-lanceolate, linear-lanceolate or cordate-ovate, 7-10 x 3-8 cm, base cuneate-subcordate, acute or shortly caudate-acuminate at apex, entire or palmate-subpinatifid, glabrous; petiolules up to 8 cm long. Panicles terminal, subcorymbose or shortly ovate; umbels globose; bracts triangular. Flowers yellowish green, ca 5 mm across; calyx obscurely toothed-truncate; petals triangular, valvate, with a ridge inside. Fruits globose, 6-8 mm across, fleshy, yellow, 3-5-seeded.

Fl. & Fr.: September-May.

Phongpui, 2300 m & North Vanlaiphai, 1500 m, Parry 153 (fide C.E.C. Fischer, l.c.).
4. MACROPANAX Miq.

1a. Leaflets dentate or serrulate; panicles rusty stellate- 
tomentose; calyx tube campanulate

1b. Leaflets entire or subentire; panicles glabrous; 
calyx tube infundibulate

1. **Macropanax dispermus** (Blume) O. Ktze., Rev. Gen. 271. 1891.
_Aralia disperma_ Blume, Bijdr. 872. 1826. **Macropanax oreophilum** Miq., 

Large, evergreen, often subscandent shrubs or small trees, up to 9 m 
high; bark grey, warty; branchlets lenticellate. Leaves digitate, 3-5 foliate; 
common petiole 12-35 cm long, with dilated and stem clasping base; leaflets 
elliptic-lanceolate or oblong, 7-15 x 2.5-5 cm, base rounded or acute, 
acuminate at apex, denticate or serrulate along margins, glabrous; petiolules 
0.5-6 cm long; lateral nerves 5-8 pairs. Panicles terminal, compound, rusty 
tomentose, up to 30 cm long, branches spreading; umbles rounded; bracts 
small, narrow-lanceolate, acuminate, caducous. Flowers greenish yellow, 
ca 3 mm across; calyx teeth 5; petals 5, valvate. Fruits ovoid, 5-6 x 4 mm, 
crowned by persistent styril column.

_Fl. & Fr._: August-March.

Common, in evergreen forests. Aizawl, 1000 m, Parry 660 (fide C.E.C. 
Fischer, l.c.); North Vanalaihpei, Deb 31082, 31142; Lawngtalai forests, Dutta 
33758; Thaltilang, Dutta 33964; Blue Mountain, 1950 m, Mao 107159.

2. **Macropanax undulatus** (Wallich ex G. Don) Seem. in J. Bot. 2: 
294. 1864; C.B. Clarke in Hook. f., Fl. Brit. India 2: 738. 1879; Kanjilal _et 
**Phuanbek**. **Phumber** (Lushai).

Small trees, 10-15 m tall; bark blackish brown, smooth or nearly so. 
Leaves digitate, 3-5 foliate; common petiole 8-27 cm long; leaflets lanceolate, 
elliptic or ovate-oblong, 2.5-18 x 1.6-6 cm, base rounded or cuneate, 
a acuminate at apex, entire along margins, coriaceous, glabrous on both 
surfaces. Panicles terminal, up to 30 cm long, glabrous, compound; bracts
triangular, caducous. Flowers greenish-yellow, ca 4 mm across; 4-7 x 3 mm; calyx teeth small; petals deciduous. Fruits ellipsoid-ovoid, 4-7 x 3 mm, crowned with persistent, bilobed stylopodium.

*Fl. & Fr.*: July-February.


5. **Schefflera** J.R. & G. Forst.

1a. Styles connate; umbels more than 50 flowered; fruits crowned by cylindrical column

1b. Styles none; umbels up to 30-flowered; fruits crowned by a conical disk:

2a. Bark shining grey; leaflets 17-20 cm long

2b. Bark white-pale brown; leaflets 7-10 cm long

...2. *S. hypoleuca*

...1. *S. clarkeana*

...3. *S. venulosa*


Large, straggling or climbing shrubs, or semi-epiphytic trees; bark grey, shining. Leaves digitate, 3-7 foliaceous; common petiole 12-35 cm long, terete; leaflets lanceolate or elliptic-lanceolate, 17-20 x 2-8 cm, subacute or rounded at base, acuminate at apex, entire along margins, glabrous; petiolules up to 2.5 cm long; lateral nerves up to 7 pairs, conspicuous on both surfaces, more prominent on lower surface. Panicles terminal, branched; bracts ovate, caducous, woolly. Flowers up to 8 mm across, in few-flowered umbellules; calyx truncate; petals 5, oblong-ovulate. Fruits globose, up to 8 mm across, 5-ridged.

*Fl. & Fr.*: January-September.

Common, in tropical evergreen forests. Lunglei, 1000 m, *Gage* 175 (*fide* C.E.C. Fischer, l.c.); Sialuk, *Deb* 30739; Sairep forest, *Dutta* 33335.

Small-medium, branched trees, 7-12 m tall, with compact crown; bark brown-grey; young parts and inflorescence with deciduous, rusty stellate scurf. Leaves digitate, 5-7 foliate; common petiole 30-70 cm long, with swollen base; leaflets polymorphic, 4-8, oblong or elliptic-ovate, 12-27 x 4-9 cm, acute, distantly serrate along margins, base rounded, under surface with deciduous stellate hairs; petiolules 0.15 cm long; lateral nerves 8-14 pairs. Panicles terminal or axillary, subcorymbose, patently branched, 25-50 cm long; bracts shortly ovate, acuminate, brown felted. Flowers greenish white, ca 5 mm across; calyx truncate; petals 5, reticulated, oblong-acute, covered with dense white stellate wool outside. Fruits globose subglobose, ca 4 mm across, obtusely 5-ribbed, crowned by a cylindrical column.

Fl. & Fr.: October-April.

Morchra, 1500 m, Parry 104; Phongpui, 2000 m, Parry 148 (fide C.E.C. Fischer, l.c.).


Small, glabrous, woody, scandent shrubs, often epiphytic; bark white-bale brown, conspicuously lenticellate. Leaves digitate, 5-7 foliate; common petiole 10-30 cm long, terete; leaflets oblong-elliptic, elliptic or oblong-elliptic, 7-10 x 2.5-7 cm, base subacute or rounded, acute-acuminate at apex, entire along margins, glabrous; petiolules 2.5 cm long; lateral nerves 5-7 pairs. Panicles terminal, highly branched, up to 25 cm long, deciduously tomentose; bracts large, ovate, caducous. Flowers white or yellowish-green, 4-5 mm across; calyx truncate; petals 5, obovate-oblong. Fruits globose, ca 5 mm across, fleshy, 5-ribbed, crowned by an conical disk.

Fl. & Fr.: January-September.

Rather common in evergreen forests. Mawmangtlang, 1500 m, Parry 511 (fide C.E.C. Fischer, l.c.); Kolasib-Bualpui, D.K. Singh 93241; North Vanlaiphai, D.K. Singh 93076; Tithlang, K.P. Singh 96634.
6. TREVESIA Vis.


Small, unbranched trees or large shrubs, 3-6 m tall, armed with small prickles; bark brown; branchlets rusty pubescent and very prickly. Leaves large, orbicular-reniform, 25-60 cm across, palmatifid or palmatisect into 7-9 lobes, truncate-subcordate at base; lobes oblong or oblong-elliptic, serrate, often irregularly lobed, glabrous; petioles 18-40 cm long. Panicles terminal, large, up to 45 cm long, deciduously rusty tomentose, branches more or less dichotomous; bracts oblong, usually deciduous. Flowers creamy white, 8-11 mm across; calyx rusty pubescent outside, limb free, undulate or irregularly dentate; petals 8-12, fleshy, valvate, reflexed. Fruits subglobose-ovoid, ca. 1 cm across, glabrous, ribs inconspicuous, crowned by the persistent style.

*Fl. & Fr.*: January May.

Morchra, 1500 m, *Parry* 105, Darzo, 1500 m, *Parry* 595 (*fide* C.E.C. Fischer, *l.c.*); Demagiri, 150 m, *Gage* 222 (CAL); *s.l.*. Lorraine 50 (CAL); Chaugail, *Prazer* (*fide* C.E.C. Fischer, *l.c.*). *s.s.*. (CAL).

**CORNACEAE**

(K.P. Singh)

**CORNUS L.**


Trees, up to 10 m tall. Leaves crowded apically on the branchlets, elliptic, 7-12 x 3-4 cm, narrowed at both ends, coriaceous, entire, thinly pubescent with adpressed hairs above, glabrous below; petioles channelled.
Flowers sessile, ca 2 mm across, in terminal, closely packed, globose heads, petaloid, yellowish-white; calyx lobes 4, rounded; petals 4, oblong. Drupes coalescing into a red succulent, globose head, 2-3 cm across, yellow when young, reddish when ripe; stones hard, compressed.

**Fl. & Fr.:** April-December.

**Recorded on the basis of C.E.C. Fischer (l.c.).**

**Uses:** Fruits edible.

**Note:** Specimen 107462, recently collected by M. Sawmiliana from Luangpaw (alt. 950 m), has been wrongly identified as *Cornus paniculata* Buch.-Ham. *ex* D.Don.

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**ALANGIACEAE**

(K.P. Singh)

**ALANGIUM** Lam.


Trees, up to 18 m tall with horizontally spreading branches. Leaves very variable, alternate, bifarious, 8-18 x 8-16 cm, orbicular to broadly oblong, base truncate, subequal, acuminate at apex, entire along margins, dark green above, pale beneath, glabrous when mature, hairy along the nerves beneath; petioles 2-3.5 (4) cm long; basal nerves 4-6; lateral nerves up to 4 pairs. Flowers in axillary, dichotomously branched peduncled cymes, white or creamy, 1.5-2.5 cm long; calyx toothed, scattered hairy; pubescent; petals 6-8, strap-shaped, puberulous; filaments covered with long silky hairs; ovary 2-celled. Drupes ca 1.3 cm across, ovoid, dark purple when ripe, slightly ribbed; ovules 1 in each cell.

**Fl. & Fr.:** April-October.

NYSSACEAE

(K.P. Singh)

NYSSA L.


Large trees, up to 40 m tall, young parts silky. Leaves alternate, crowded apically, elliptic-ovate or oblong-lanceolate, 10-15 x 3-8 cm, cuneate at base, apex acuminate, entire, glabrescent above, glabrous and thinly pubescent beneath; petioles 2-5 cm long. Flowers unisexual, sessile, axillary, collected together in dense globose, pedunculate heads. Male heads: calyx 3-toothed; petals 5, silky pubescent outside; stamens 10, disc fleshy, grooved. Female heads: calyx campanulate, 4-5-toothed; petals 4-5; ovary 1-celled; style with 2 divergent or curled branches. Drupes ellipsoid, 10-12 x 5-6 mm, greenish yellow, glabrous, purple when ripe, apex pointed.

Fl. & Fr.: April–December.

Tilthlang, Dutta 33766.

CAPRIFOLIACEAE

(P. Bujarbarta & K.P. Singh)

1a. Flowers zygomorphic; fruits many-seeded

1b. Flowers actinomorphic; fruits 1-seeded

2a. Leaves imparipinnate

2b. Leaves simple
1. Lonicera L.


Climbing shrubs; young parts silky villous. Leaves opposite, oblong, oblong-lanceolate, ovate-elliptic, 3-7 x 1.5-3 cm, cordate at base, shortly acuminate at apex, entire along margins, coriaceous, rugose above, villous beneath and along midrib above. Flowers in dense terminal panicles, 4-6 cm long, pale yellow or yellowish-white; calyx lobes linear, with long hairs; corolla bilabiate, glabrous outside; style purplish. Berries fleshy ovoid, ellipsoid, narrowed at tip.

*Fl.* & *Fr.*: April-October

Naosel, 750 m, Parry 12 (*fide* C.E.C. Fischer, *l.c.*).

2. Sambucus L.


Shrubs, upto 2 m high, Leaves 30 cm long; Leaflets 5-9, oblong-lanceolate, 8-12 cm long. Corymbbs leafy at base, puberulous; corolla white, campanulate. Drupes globose.

Searce. Sairep, Dutta 33588.

3. Viburnum L.

1a. Leaves 3-nerved at base

1b. Leaves penninerved

2a. Leaves dentate; corolla rotate; lobes spreading

2b. Leaves entire; corolla tubular; lobes short, not spreading

Shrubs or small trees, up to 10 m tall. Leaves opposite, oblong-lanceolate, 9-13 x 2.5-4.5 cm, acute to cuneate at base, long acuminate at apex, entire along margins, coriaceous, glabrous above, hairy at nerves axils beneath; lateral nerves 3-5 pairs; petioles 1.2-1.8 cm long. Flowers in corymbbs, scented, white; calyx tube glabrous; lobes indistinct; corolla tubular, erect; anther exserted. Drupes compressed, ellipsoid, 3-4 x 3 mm, black, acute as apex; seeds 2-grooved dorsally.

Fl. & Fr.: October-December.

Scarce, in primary forests on hill slopes. North Vanlaiphai Parry 386 (fide C.E.C. Fischer, l.c.); Sangau, 1150 m, Mao 107179.


Shrubs or small trees, up to 5 m tall; young parts stellate-hairy. Leaves rhomboid or elliptic-lanceolate, 2.5-7 x 1.5-3 cm, base cuneate, acute-micronate at apex, dentate along margins, glabrous above, pubescent on the nerves beneath; lateral nerves 3-4 pairs; petioles 0.5-1.5 cm, stellate pubescent. Flowers in compound pedunculate umbels, creamy white; calyx tube glabrous with minute teeth; corolla short, rotate. Drupes scarlet-red, ca 5 x 4 mm, seeds dorsally 2-grooved, ventrally 3-grooved.

Fl. & Fr.: June-December.

In primary forests, Yawmbuk-Thaitlang, 1100 m, Dutta 33919.

Large, aromatic shrubs; young shoots puberulous. Leaves opposite, elliptic to oblong, lanceolate, 4-12 x 2-6 cm, cuneate or rounded at base, acuminate at apex, dentate along margins, entire towards base, glabrous except on the nerves beneath, lateral nerves 3-5 pairs; petioles 1-1.5 cm long, minutely pubescent. Flowers in terminal, subglobose corymbs; calyx tube minutely hairy; lobes ovate, 2-3 mm long; corolla white,rotate; lobes pubescent inside, 3-4 mm long; stigma capitulate. Drupes 4-5 x 4 mm, rounded oblong, yellow to red-purplish when ripe; seeds 2-grooved on both faces.

Fl. & Fr.: April-June.

Scarce. Muallaman-rum, 650 m, M. Sawmtilana 101747; Darlawn, 1250 m, M. Sawmtilana, 101748.

Uses: Young leaves are added in cooked vegetable or used as spices.

**Rubiaceae**

(Papia Roy Choudhury)

1a. Flowers unisexual ... 30. Primumoneris

1b. Flowers bisexual:

2a. Flowers in globose heads; trees or large shrubs:

3a. Ovules solitary in each cell ... 18. Morinda

3b. Ovules many in each cell.

4a. Woody climbers ... 38. Uncaria

4b. Trees or erect shrubs:

5a. Corolla imbricate or twisted in bud ... 24. Neolamarckia

5b. Corolla valvate in bud:

6a. Seeds winged ... 16. Metadina

6b. Seeds not winged:

7a. Calyx truncate; seeds winged ... 17. Mitragyna

7b. Calyx cupular; seeds tailed ... 9. Holtinga

2b. Flowers not in globose heads, if heads then undershrubs or herbs:
8a. Ovules many in each cell:

9a. Few flowers with petaloid sepals ....19. Mussaenda

9b. Sepals not petaloid:

10a. Ovules 4-10 in each cell ....11. Hypithanthera

10b. Ovules numerous in each cell:

11a. Fruits capsule:

12a. Plants epiphytic ....23. Hymenopogon

12b. Plants not epiphytic:

13a. Corolla lobes imbricate:

14a. Stamens exserted ....39. Wendlandia

14b. Stamens inserted ....15. Leucitia

13b. Corolla lobes valvate:

15a. Flowers tetramerous:

16a. Seeds planoconvex with ventral cavity ....22. Neanoris

16b. Seeds without ventral cavity:

17a. Capsules compressed ....1. Anotis

17b. Capsules not compressed ....10. Rodyris

15b. Flowers pentamerous:

18a. Seeds obliquely oblong ....96. Silvianthus

18b. Seeds not oblique:

19a. Capsules dehiscing above by one valve ....2. Argostemon

19b. Capsules dehiscing above by two valves ....26. Ophiopogon

11b. Fruits berry:

20a. Seeds minute:
21a. Inflorescence panicle of cymes  
21b. Inflorescence capitate or umbellate cyme  

20b. Seeds large:

22a. Ovary 1-celled:

23a. Seeds many  
23b. Seeds 8  

22b. Ovary 1 or 2-celled:

24a. Fruits black or yellow when ripe  
24b. Fruits blackish-purple when ripe  

8b. Ovules solitary in each cell:

25a. Seeds attached with the septum:

26a. Stipules present  
26b. Stipules absent  

25b. Seeds not attached with the septum:

27a. Corolla lobes twisted in bud:

28a. Flowers in corymbs:

29a. Bracts coriaceous  
29b. Bracts membranous  

28b. Flowers solitary or in axillary fascicles:

30a. Calyx lobes regular  
30b. Calyx lobes irregular:

31a. Flowers many in fascicles  
31b. Flowers solitary or 1-3 together  

27b. Corolla lobes valvate in bud:

32a. Herbs:

33a. Fruits with purple juice  
33b. Fruits without purple juice  

32b. Shrubs or trees:
34a. Plants fruticose:

35a. Woody climbers

35b. Not climbers:

36a. Ovary 4-9-celled

36b. Ovary 2-celled

34b. Plants not fruticose:

37a. Seeds not ventrally concave

37b. Seeds ventrally concave:

38a. Stipules bifid

38b. Stipules entire

1. ANOTIS DC.


Diffuse, perennial herbs. Leaves sessile, ovate, 0.2-1 x 0.4-0.7 cm, apex acute, base acute or rounded; lateral nerves obscure. Flowers shortly pedicelled; capitulate cymes on axillary branchlets; calyx tube short; lobes 4, recurved or erect; corolla pinkish-white, tubular; lobes 4; stamens 4, adnate to mouth of corolla; ovary 2-celled; stigma 2-4, linear. Capsules laterally compressed, unicellular, 2-4-celled, indehiscent; seeds rugose when dry.

Fl. & Fr.: September-December.

Theatri, Deb 31268; North Vanaipai, D.K. Singh 97166.

2. ARGOSTEMMA Wallich

1a. Leaves elliptic orbicular

1b. Leaves lanceolate or ovate-lanceolate:

2a. Corolla 0.2-0.3 cm long

2b. Corolla lobes 0.5 cm long

Delicate, small herbs. Leaves 4 on a node, ovate-lanceolate, 3-5 x 1-1.3 cm, membranous, base cuneate, apex acuminate; stipules 4, verticillate, 0.2-0.3 cm long. Flowers in pedunculate terminal umbels; calyx tube 0.4-0.5 cm long, apically 5-lobed; lobes triangular; corolla white; lobes 5, valvate; stamens 5; anthers large; ovary 2-celled; styles filiform, 0.3-0.4 cm long; stigma capitate.

*Fl. & Fr.*: September-January.

Lushai hills, 600-100 m, Wenger 221a (*féide* C.E.C. Fischer, *l.c.*).


Small, delicate herbs. Leaves sessile or shortly petiolate, opposite or whorled, unequal in size, elliptic-orbicular, obtuse at both the ends, pubescent; stipules minute. Flowers in pedunculate, terminal umbels; bracts ovate; calyx tube short, pubescent; lobes 5, ovate; stamens 4; ovary 2-celled; ovules many in each cell; style filiform; stigma capitate. Capsules 2-celled; seeds minute.

*Fl. & Fr.*: August-September.

Growing on wet rocks. Lushai hills, 600-1200 m, Wenger 220, 222 (*féide* C.E.C. Fischer, *l.c.*)


Delicate herbs. Leaves 4 in a whorl, sessile, lanceolate, 7-10 x 0.8-18 cm, base oblique, apex acuminate; glabrous, margins unequal. Flowers in umbels, 0.6-0.8 cm in diam.; corolla 0.7-0.9 cm long, tube 0.5-0.7 cm. Capsules 2-celled; seeds minute.

*Fl. & Fr.*: November-March.
Growing on tree trunks and wet rocks in shady forests. Leite, Parry 279 (fide C.E.C. Fischer, i.c.); Lushai hills, 950-1200 m, Wenger 221, 268 (fide C.E.C. Fischer, i.c.); 60 miles South of Lunglei, 1050 m, Wenger 317, (fide C.E.C. Fischer, i.c.).

3. **CANTHIDIUM** Lam.

1a. Leaves 8-15 cm long, base cuneate

1b. Leaves 2-5 cm long, base acute or rounded

...1. *C. glabrum*

...2. *C. gracilipes*


Medium sized trees; branchlets decussate, irregularly fluted. Leaves opposite, elliptic, ovate-oblong or oblong-lanceolate, 8-10 x 3-4 cm, base cuneate, apex obtuse or abruptly acuminate, coriaceous, glabrous on both surfaces, glossy above, paler beneath; lateral nerves 5-7 pairs, gland pitted or not, petioles 0.3-0.5 cm long, stipules subulate, base wide. Flowers on shortly peduncled cymes: calyx 1-1.3 cm long, glabrous; corolla white, tubular; tubes subglobose, apically 5-lobed, ovary 2-celled; ovules 1 in each cell; stigma nitriform, notched. Fruits globose, 1-1.5 cm in diam.; pyrenes triangular, keeled, smooth.

*Fl & Fr.*: July-March

Kawnpui, K.P. Singh 97033; Dampui, 920 m, *M. sawmiliana* 107445.

*Uses:* Fruits edible; wood used as firewood.


Scrambling shrubs; young shoots pubescent. Leaves elliptic, ovate or oblong-lanceolate, 2.5-6 x 1-2.5 cm, base acute or rounded, apex acuminate, membranous, glabrous, nerves puberulous on lower surfaces; lateral nerves 5-7 pairs; petioles 0.2-0.3 cm long; stipules subulate, pubescent. Flowers tetramerous, solitary or in pairs on capillary pubescent pedicels; calyx teeth subulate, glabrous. Fruits bluish-black, sinuate at apex.

*Fl. & Fr.*: April-November.
4. **CHASALIA** Comm. ex Poiret

1a. Shrubs; calyx blackish green

1b. Trees; calyx whitish-red at the apex of lobes

1. **Chasalia curviflora** (Wallich) Thwaites var. *ophioxyloides*


*Psychotria ophioxyloides* Wallich in Roxb., Fl. Ind. 2: 167. 1824.


*Kanjilal et al.,* Fl. Assam 3: 86. 1939. *Chasalia ambiguа* Wight & Arn.,


Shrubs or undershrubs, up to 2 m tall. Leaves obovate oblancoate, 10-18 x 2.5-5 cm, base cuneate, apex acuminate, margins recurved, midrib glabrous beneath; petioles 1-3 cm long; stipules ovate, bifid. Panicles 4-5 cm long, lax to dense-flowered; flowers pinkish-white; calyx short, 5-lobed; corolla tubular, curved, throat yellow; stamens included, in shorter stamens filaments 0.2-0.3 cm long, longer excluded, 0.31-0.4 cm long. Fruits globose, 0.5-0.9 cm in diam.

*Fl. & Fr.:* March-September.

Mizo hills, *Dutta* 33658, 33659, 30768; Saithah, D.K. Singh 92917.


Small trees; branches terete. Leaves elliptic-lanceolate, 12-30 x 3-7 cm, falcate, membranous, glabrous, base attenuate, apex acuminate; petiole 1-2 cm long; stipules connate at base. Flowers small in pedunculate dense heads; bracts cuspidate, ovate; calyx lobes 5, triangular, apex acute; corolla curved, slightly longer than calyx lobes; stamens inserted; anthers linear; ovary 2-lobed; stigma bifid. Fruits subglobose, didymous, glabrous.

*Fl. & Fr.:* May-December.

Tawkzwai, Parry 180; (*fide* C.E.C. Fischer, i.e.). Endemic, known only by type.
5. COFFEA L.


Shrub; branches spreading. Leaves bitious, elliptic to ovate-oblong, 10-12 x 3-4.5 cm, base narrowed, apex acuminate, glabrous on both surfaces; lateral nerves 10-12 pairs, nerves gland pitted; petioles 1-1.5 cm long; stipules lanceolate, cuspidate. Flowers axillary; bracts many, foliaceous; calyx limb truncate; corolla white, funnel-shaped. Drupe oblong, purple when ripe.

*Fl. & Fr.*: March-December.

Cultivated. Sialsuk to Aizawl, Deh 30868, 38357, 38358; Saithah, D.K. Singh 98844; Sabual, D.K. Singh 99028.

*Use*: Source of commercial coffee beans.

6. FAGERLINDIA Tirvengadum


Shrubs; stems spinous. Leaves fascicled, oblong-lanceolate, elliptic or ovate, 2-17 x 0.4-0.8 cm, base rounded, apex acute or acuminate, membranous, glabrous; lateral nerves 9-11 pairs; petioles 0.4-1.3 cm long; stipules lanceolate. Cymes terminal or axillary. Flowers 3 together; calyx lobes linear, deciduous; corolla tube slender; lobes broad, oblong, apiculate, hairy at base. Berry blackish purple, globose, 0.3-0.5 cm in diam.; seeds numerous, angular.

*Fl. & Fr.*: March-May.

*S.lac., Parry s. num* (CAL); Saithah, D.K. Singh 92918; Kawnpui forest, K.P. Singh 96973; Teirei, D.K. Singh 99194.
7. GALIUM L.

1a. Leaf margins and midrib bristly

1b. Leaf margins and midrib not bristly


Perennial, scandent herbs; stems 4-angled, recurved bristles on angles. Leaves whorled, elliptic or linear lanceolate, 1-3.2 x 0.3 x 0.4 cm, apex acute or slightly acuminate; margins recurved, margins and midrib bristly. Flowers in lax panicle or cymes. Fruits globose.

Fl. & Fr.: June-November.

Thalhlang, Dutta 33905.


Perennial, diffused herbs; branchlets 4-angled. Leaves whorled, ovate or elliptic, sessile, 0.8-2 x 0.4-0.8 cm, apex acute, mucronate, subcoriaceous, hispid; basal nerves 3. Flowers minute, tetramerous in terminal cymes; corolla greenish-white; stamens on corolla tube; ovary 2-celled; style bifid; stigma capitate. Fruits dry, hispid, hooked hairy; seeds ventrally grooved.

Fl. & Fr.: November-February.

In exposed places. Sailam 5000 ft., Parry 175; Blue Mountain, 1500-2000 m, Wenger 367 (fide C.E.C. Fischer, l.c.) Phongphui, K.P. Singh 96793.

8. GARDENIA Ellis.

1a. Leaves entire; lateral nerves 5-6 pairs; flowers dimorphic, sessile

1b. Leaves crenate towards apex; lateral nerves 11-13 pairs; flowers not dimorphic, short-pedicelled

1. G. campanulata

2. G. coronaria

Large shrubs or small trees; branches reduced, spinescent. Leaves obovate or elliptic-lanceolate, 2-10 x 1.5-5 cm, base narrowed, apex acute-acuminate, entire, membranous; lateral nerves 5-6 pairs; petioles 0.5-1.5 cm; stipules free, triangular. Flowers dimorphic; male flowers fascicled; hermaphrodite flowers solitary, sessile; calyx of male flowers uniform, that of hermaphrodite flowers campanulate; corolla campanulate, tube 0.6-0.8 cm. Fruits ellipsoid-subglobose, faintly 5-ridged, 0.8-3 cm.

*Fl. & Fr.:* March-November.

*S. loc., Parry s. nam* (CAL).


Deciduous trees or shrubs; buds resinous. Leaves obovate, 7-16 x 3-7 cm, base narrowed, apex acuminate, margins crenate forwards apex, glabrous; petioles 0.8-1 cm long; stipules connate; lateral nerves 11-13 pairs. Flowers solitary, axillary; calyx tube 2-3 cm long; split on one side up to middle; corolla fragrant, white; tube 6-7 cm long, apically 5 lobed; ovary 1-celled; stigma 5-lobed; ovules many. Fruits ellipsoid, ribbed. 2-3 x 0.8-1 cm.

*Fl. & Fr.:* April-June.

*S. loc. Wanger 6* (CAL).

9. HALDINA Ridsdale

Trees. Leaves cordate to orbicular, 10-15 x 12-19 cm, chartaceous, apex abruptly acuminate, base cordate, puberulous along nerves above, pubescent below; lateral nerves 8-10 pairs; stipules interpetiolar, foliaceous, caducous. Flowers on subsessile, globose heads; bracts ovate to suborbicular; bracteoles linear-subulate; calyx cupular, obscurely 5-angled, apically unequal, 5 lobed; corolla creamish, 3-3.5 cm long, funnel-shaped, glabrous within; stamens 5; ovary 2-locular; ovules 3-5 on apical placentae. Capsule 0.3-0.4 cm, seeds elongate, tailed above.

Fl. & Fr.: June-October.

Mizo hills, Deb 31954.

10. HEDYOTIS L.

1a. Fruits indehiscent:
   2a. Cymes sessile
   2b. Cymes peduncled:
      3a. Peduncles short ...
      3b. Peduncles long ...

1b. Fruits dehiscent:
   4a. Fruits dehiscing septicidally:
      5a. Plants climbing ...
      5b. Plants erect or decumbent ...
   4b. Fruits dehiscing loculicidally:
      6a. Leaves lanceolate ...
      6a. Leaves linear or linear lanceolate:
         7a. Leaves linear-lanceolate ...
         7b. Leaves linear ...


Decumbent, profusely branched herbs. Leaves subsessile to shortly petiolate, ovate or ovate-lanceolate, 1-4.5 x 4-5 cm, base cuneate, apex
acute, glabrous, scabridulous near margins; nerves pubescent beneath, lateral nerves 3-4 pairs; stipules membranous, hispid, slightly ciliate. Flowers pedicellate, in axillary cymae, heterostylous; calyx tube ovoid, hisrate, apically 4-teethd, ovate, margins ciliate; corolla greenish yellow, tube campanulate, 0.1-0.2 cm long, pilose inside, round in short styled flowers, apically 4-lobed; lobes ovate-oblanceolate, hairy; ovary 2-celled; ovules numerous. Capsules globose, indehiscent, hairy with persistent calyx teeth; seeds numerous, angular.

Fl. & Fr.: March-December.

Pulio basti, K.P. Singh 94465; Tithliang, K.P. Singh 96639; Denlang, K.P. Singh 94123.


Decumbent herbs; branches suberect or quadrangular, yellowish. Leaves elliptic-lanceolate, 3-4.5 x 0.3-0.7 cm, apex acuminate, margins scabrid, yellowish green, villous, lateral nerves 5-7 pairs, stipules membranous, hispid, processes subulate. Flowers many in axillary cymes, shortly pedicelled; calyx hispid, tube ovoid, lobes subulate; corolla lilac, bell-shaped, hairy within; lobes 4, oblong, hispid outside; stamens 4, inserted; ovary 2-locular; ovules numerous; stigma bilab, papillose. Capsules globose, ca 0.2 cm diam; seeds few.

Fl. & Fr.: August-February.

In open places in old jhums, 1000 m, Parry s.n. (CAL); s.loc., Wenger 271 (fide C.E.C. Fischer, l.c.).


Diffuse herbs, rooting from lower nodes, terete; stems glabrous. Leaves subsessile, linear or linear-lanceolate, 2-3 x 0.2-0.5 cm, base
narrowed, apex acute, margins recurved, nerves not prominent; stipules laciniate, scabrid. Flowers solitary or in pairs, axillary, sessile or shortly pedicelled; calyx 4-teethed, subulate, ciliate; corolla pinkish-white, 4-lobed, glabrous; stamens 4 at corolla mouth; anthers linear; ovary 2-celled. Capsules didymous within calyx; seeds angular, minute.

Fl. & Fr.: June-February.

North Vandalai, D.K. Singh 97169.


Diffuse undershrubs, stems hispid on the grooves. Leaves subsessile, ovate-lanceolate or linear-lanceolate, 2-9 (13) x 0.5-3 cm, base narrowed, apex acuminate, membranous, glabrous above; nerves pubescent beneath; lateral nerves 5-7 pairs; stipules short with long spinous processes. Flowers in panicked cymes on axillary peduncles; calyx teeth 4; corolla tube campanulate, hairy within, apically 4-lobed; stamens 4, filaments as long as the corolla lobes; anthers oblong; ovary 2-locular; ovules many; stigma 2-lobed, papillate. Fruits globose, glabrous, indehiscent; seeds numerous.

Fl. & Fr.: June-January.

Aizawl, Godfrey 550 (CAL); Lushai hills, Deb 30671.


Decumbent herbs, base woody; branches quadrangular, pubescent. Leaves oblong or linear oblong, 5-10 x 1.5-3.5 cm, apex acute; nerves puberulous beneath; stipules ciliate with recurved bristles. Flowers in terminal, capitulate, sessile cymes surrounded by stipular bracteoles and by base of upper leaves; calyx 4-lobed, 0.6-0.9 cm long; lobes lanceolate, apex acute, margins ciliate; corolla blue, tubular, 4-lobed; tube 1-1.2 cm long, wide and hairy above; lobes with 3-5 spinous appendages on dorsal side; stamens 4, included; ovary 2-celled; ovules numerous; stigma bifid. Capsules ellipsoid, 0.4-0.5 x 0.3-0.4 cm; seeds angular.
Fl. & Fr.: March-September.

Aizawl, 900 m, Parry 232 (fide C.E.C. Fischer, l.c.). Chandrapur reserve, Deb. 1107; Bualpui-Yawnabuk, Dutta 33884.

*Fig. 146.*

Shrubby climbers; young shoots pubescent. Leaves elliptic-lanceolate, 4-11 x 1.5-2.8 cm, apex acuminate, margins undulate, glabrous; nerves 4-6 pairs, paler beneath; stipules connate truncate, bicuspidate ciliate, 0.2-0.3 cm long. Flowers on axillary or terminal trichotomous subcorymbs; calyx tube wide at mouth; lobes 4, oblong; corolla white, 4-lobed, hairy inside; stamens 4; ovary 2-celled; ovules many; styles hairy; stigma bifid. Capsules obovoid, 2-celled, septicidally dehiscing; seeds planoconvex, numerous.

Fl. & Fr.: December-July.

Lunglei, 900 m, Gage 48 (fide C.E.C. Fischer, l.c.); Sonai to Sakkin in Leslie 67 (CAL); Lawngtai-Kawfchaw, D.K. Singh 92845; Kawlthkull-Tuichang, D.K. Singh 94423; Saitlah, D.K. Singh 98815; Kawlthkull-Hlaspui, K.P. Singh 94313; Thenzawl-Buangpui road, K.P. Singh 93826; Lushai hills, Deb 30557; Keifang, K.P. Singh 99255.


Diffuse herbs; stems woody at base, 4-angled, glabrous. Leaves sessile, linear-lanceolate, 2-4.5 x 0.3-0.8 cm, apex acuminate, margins revolute; 1-nerved; stipules long ciliate. Flowers 2-6 in axillary clusters, sessile or sub-sessile; calyx teeth ovate-triangular, rigid; corolla white, 1-2 mm long. Capsules ovoid, 2-3 mm in diam., glabrous with persistent calyx teeth.

Fl. & Fr.: June August.
Fig. 146: Hedyotis scandens Roxb.
Lushai hills, Deb 30962; Tuipui-Darzo Road, K.P. Singh 94045, 94793; Mizo hills, Dutta 33831; Champhai, Deb 30962.


Diffuse herbs; stems terete, hispid. Leaves sessile lanceolate, 3-7 x 0.5-1.2 cm, margins recurved, bristly hairy, pale hispid or glabrous beneath, nerve 1; stipules ciliate. Flowers 2-6 in axillary clusters; calyx hispid, slightly tubular; lobes triangular; corolla white, 0.4-0.6 cm long. Capsules ovoid, hispid.

Fl. & Fr.: May-September.

Kawhukhlu-Hiapui, K.P. Singh 94344; Mizo hills, Dutta 33912 (CAL); Lushai hills, Deb 31442.

11. HYMENOPOGON Wallich


Epiphytic shrubs. Leaves oblanceolate, elliptic or obovate-lanceolate, 7-18 x 2-6.8 cm, base attenuate, apex acuminate or acute, puberulose; lateral nerves 18-20 pairs; petioles 0.4-1 cm long; stipules ovate, apex acute. Flowers in trichotomous corymbs, 5-8 cm in diam.; bracts white, stalked; calyx tube linear, lobes ovate; corolla white, 3-4.7 cm long, lobes spreading. Capsules 1-2 cm long, oblong-ellipsoid, membranous.

Fl. & Fr.: June-October.

Hmuifang, 1600 m, Parry 254 (fide C.E.C. Fischer, l.c.); s. loc., 1200-1500 m. Wenger 223. 224 (fide C.E.C. Fischer, l.c.).
12. HYPTIANTHERA Wight & Arn.


Shrubs. Leaves linear-lanceolate or elliptic-oblong, 4-10 x 1.5-4.5 cm, margins undulate, base rounded or cuneate, apex caudate-acuminate, glabrous; lateral nerves 6-7 pairs, hairy beneath when young; petioles 0.8-1.2 cm long; stipules caudate, acuminate, persistent. Flowers sessile in axillary dense cymes; bracts minute, ciliate; calyx shortly tubular; lobes ovate, apex acute, hairy within; corolla tubular; lobes 4-5; anthers 4-5, sessile; ovary 2-celled; ovules 4-10 in each cell; stigma bifid, white, brushlike. Berries 0.4-0.5 cm in diam., globose, black when ripe; seeds angular, compressed.

Fl. & Fr.: February-May.

Sairang, Deb 30597; Lawngtlai, Dutta 33375; Lunglei-Sairep. Dutta 33497; Tipaimukh, Kanjilal 4783; Hnathial-Thuichang river, K.P. Singh 96910; Kawnpui, K.P. Singh 97021 Sageal, K.P. Singh 99032.

13. IXORA L.

1a. Calyx teeth longer than ovary:

2a. Petioles 0.2-0.3 cm long


Small shrubs; branchlets ribbed. Leaves elliptic or elliptic-oblong, 8-17 x 8.5-10 cm, base rounded, apex acuminate, coriaceous, glabrous above,
tomentose beneath; lateral nerves 10-12 pairs, hairy on both surfaces; petioles 1-1.5 cm long; floral pair of leaves ovate or obovate, sessile, base rounded. Flowers on peduncled, bracteate, pubescent cymes; calyx teeth shorter than ovary, puberulous; corolla white, glabrous, tube 1.8-2 cm long, slender, lobes 4, notched; ovary ovoid; stigma bifid. Fruits red, ellipsoid, 0.3-0.5 cm in diam.; crowned by calyx limb; seed ventrally concave.

Fl. & Fr.: May-October.

Bungalang, Deb 31453; Sairang, Deb 30568; Bualpu, D.K. Singh 93029.


Shrubs; branchlets pubescent. Leaves ovate or elliptic, 14-32 x 8-12 cm, base cuneate, apex acuminate, coriaceous, glabrous above, tomentose beneath; lateral nerves 10-12 pairs; petioles 0.3-0.4 cm long; stipules tomentose. Flowers on pedunculate, bracteate cymes; corolla white, glabrous, tube slender, 0.2-0.4 cm wide, notched; style exserted. Fruits red, 0.4-0.5 cm in diam., crowned by calyx limb; seeds concave ventrally.

Fl. & Fr.: April-August.

Lungleh, ca 1000 m, Gage 236 (fide C.B.C. Fischer, l.c.).


Shrubs. Leaves elliptic-lanceolate or oblanceolate, 6-8 x 1.2-3.5 cm, base acute, apex acuminate, subcoriaceous, glabrous; lateral nerves obscure; petioles 0.3-1.5 cm long; stipules sheathing, cuspidate, geniculate. Flowers in terminal, subsessile cymes; peduncles geniculate; calyx red, longer than ovary; corolla red, gradually turned into white, tube 0.8-1 cm long; lobes 4, lanceolate, reflexed. Fruits crowned with calyx teeth; seeds 1 or 2, concave.

Fl. & Fr.: November-April.
Chekawn ca 1000 m, Parry 379 (side C.E.C. Fischer, l.c.); 15 miles South East of Lungleh, Gage 143 (CAL); sloc., Parry s.nurn (CAL); Changail, Prazer s.nurn (CAL); Lawngtalai, K.P. Singh 96927; Kawnpui, K.P. Singh 97027; Thalang, B.M. Wadhwa & K.P. Singh 96832, 99832.


Large shrubs. Leaves elliptic-lanceolate, 8-16 x 4-8.5 cm, acute or obtuse at both ends, margins undulate, membranous, glabrous, shining; lateral nerves 24-30 pairs; petioles 1-1.2 cm long; stipules marginate with long cusp. Flowers in peduncled, bracteate cymes; bracts and bracteoles persistent; calyx glabrous; corolla pinkish, tube slender, 1-1.3 cm long, lobes as long or slightly shorter than tube; stigma recurved. Fruits ellipsoid, purplish; seeds plano-convex.

*fl. & fr.*: April-September.

Lungleh, Dutta 33367; Lawngtalai, K.P. Singh 96896; Phellawn forest, K.P. Singh 97032.

14. **KNOXIA L.**

1a. Stems with 2 lines of pubescence

1b. Stems pubescent throughout


Herbs. Leaves sessile, linear-oblong, 4-9 x 0.5-1 cm, apex obtuse, margins hairy, coming down to stem; stipules pubescent. Flowers in capitulate cymes; one calyx lobes longer, obtuse; corolla white, throat villous. Fruits angled, shortly pedicelled.

*fl. & fr.*: October January.
Champain at 1500 m, Parry 339 (flora C.E.C. Fischer, l.c.).


Erect herbs. Leaves linear-lanceolate or lanceolate, 4-8.5 x 1-2.4 cm, base cuneate, apex acuminate, greyish pubescent; lateral nerves 7-9 pairs; petioles 0.5-0.8 cm long, pubescent; stipules connate at base, 3-5, bristly hairy. Flowers in corimbous cymes; calyx tube persistent, apically 4-lobed, 1 longer; corolla white, lobes 4; stamens 4, inserted; ovary 2-celled; ovules 1 in each cell. Fruit mericarps 4-angled.

*Fl. & Fr.*: August-January.


15. LASIANTHUS Jack

1a. Cymes peduncled

1b. Cymes sessile:

2a. Fruits brownish black

2b. Fruits bluish:

3a. Fruits with 6 pyrenes

3b. Fruits with 4-5 pyrenes


Undershrubs. Leaves sessile, elliptic lanceolate, 7-10.7 x 1.8-3.2 cm, base acute, apex long acuminate; lateral nerves 5-7 pairs, hairy below; stipules linear-subulate; bracts 0.1-0.2 cm long. Flowers in peduncled cymes; corolla blue. Fruits pale blue, subglobose, 1-1.2 cm in diam.

*Fl. & Fr.*: January-December.
Lai[len, 300 m, Parry 361 (fide C.E.C. Fischer, l.c.); Teirei, D.K. Singh 99193; Chhikhallang, D.K. Singh 99144; Saithab, D.K. Singh 98938.


Shrubs. Leaves ellipitical to oblong-lanceolate, 8-18 x 2-3.5 cm, base acute or rounded, apex acute, margins undulate, ciliate, chartaceous, glabrous above, strigose below; lateral nerves 5-7 pairs, petioles 0.5-0.7 cm long. Flowers sessile, axillary in cymes; corolla white, tube hairy. Fruits globose, 0.2-0.3 cm in diam., blue; seeds 6.

*Fl. & Fr.:* March-December.

North Vanlaiphai, Deb 31154.


Evergreen shrubs. Leaves elliptic or lanceolate, 5-7.5 x 2.3-5 cm, base cuneate, apex acute, margins undulate, slightly coriaceous, rough and hairy beneath; lateral nerves 5-6 pairs, Petioles 0.6-1 cm long. Flowers in axillary clusters, sessile; bracts orbicular, 0.2-0.3 cm wide, shining inside; calyx cup-shaped, lobes lanceolate; corolla white, villous inside. Fruits deep blue, 0.4-0.8 cm in diam.; seeds 5.

*Fl. & Fr.:* May-December.

Siata, ca 1300 m, Parry 544 (CAL); Sialsuk, Deb 30720; Tawipui, Dutta 33632.


Shrubs; stem brown felted. Leaves elliptic or elliptic-lanceolate, 4.5-11 x 2-3.7 cm, base cuneate, apex acute or acuminate, margins undulate, slightly coriaceous, hairy beneath; lateral nerves 5-6 pairs; petioles 0.7-1
cm long; stipules triangular. Flowers sessile in axillary clusters; bracts orbicular, shining inside; corolla purplish white, throat villous. Fruits subglobose, 0.5-0.8 cm in diam., brownish yellow when ripe, juice yellow; seeds 5, yellow.

_Fl. & Fr._ May-December.

Sialsuk, Deb 30720; Tawipui, Dutta 33632.

16. **LUCULIA** Sweet

1a. Tubercles absent at the base of corolla lobes

1b. Tubercles present at the base of corolla lobes

... 1. _L. gratissima_


Shrubs. Leaves oblong-lanceolate, lanceolate or elliptic-lanceolate, 12-18 x 4-8 cm, base cuneate, apex acuminate, membranous, pubescent beneath or not; nerves 9-12 pairs; petioles short. Flowers pale-pink, in terminal, many-flowered corymbs, odorous, 12-14 cm in diam.; calyx tube 0.5-0.7 cm long, lobes 5, longer than tube, glabrous or pubescent; corolla salver-shaped, tube 2-3 cm long. Capsules obovoid.

_Fl. & Fr._ September-April.

Sialsuk, 1500 m, _Parry_ 417 (flide C.E.C. Fischer, _l.c._).


_Fig._ 147.

Trees or shrubs. Leaves oblong-lanceolate, elliptic, 8-14 x 2-4.5 cm, base cuneate, apex acuminate, glabrous above, slightly pubescent beneath; lateral nerves 11-16 pairs; petioles 1-1.3 cm long. Flowers in axillary or terminal pedicelled corymbs, odorous; calyx lobes spatulate, apex brownish red within; corolla whitish pink, hypocrateriform, interposed tubercles at
Fig. 147: Luculia pinceana Hook.
sinuses; stamens 5; ovary 2-celled; stigma 2, linear. Capsules obvoid, 1-2.2 cm long; seeds numerous, minute.

_Fl. & Fr._: August-April.

Blue mountain, 1950 m, Mao 107167.

17. METADINA Bakh f.


Trees, up to 15 m tall. Leaves lanceolate to elliptic-oblongeolate, 10-12 x 2-3.5 cm, apex acuminate, base cuneate, glabrous below, glaucous above; lateral nerves 7-10 pairs; petioles 0.3-1 cm long. Heads 0.4-0.5 cm in diam., pedunculate in trichotomously branched panicles; peduncles and pedicels glabrous or puberulose; calyx tubular, pubescent, lobes oblong, obtuse; corolla tubular, 0.2-0.3 cm long; lobes 4-5, ovate, persistent; ovary 2-celled; style exserted; stigma clavate. Capsules obvoid, crowned by calyx limb; seeds minute, minutely winged.

_Fl. & Fr._: October - April.

Thingphal 1200 m, Parry 441 (fide C.E.C. Fischer, _l.c._); Tawkzawl, 600 m, Parry 182 (CAL). Tepaimukh, Kanjilal 4770; Sialsuk, Deb 30752, 30719; Aizawl, Deb 30897.

18. MITRAGYNA Kurth.

Deciduous trees; Leaves orbicular, obovate-elliptic, 8-12 x 5-9 cm, base rounded or subcordate, apex obtusely acuminate, slightly hairy beneath; lateral nerves 5-7 pairs; petioles 1.2-3 cm long, stipules obovate. Flowers in axillary, bracteate, panicked heads; bracteoles glabrous, margins apically hirsute; calyx tube obconic, lobes obscure, margins hirsute; corolla white, 0.2-0.3 cm long. Fruits ribbed; seeds winged.

Fl. & Fr.: September January.

Darzo, 1500 m, Parry 593 (Fide C.E.C. Fischer, l.c.); Thlabung, K.P. Singh 94269; Puilo basti road, K.P. Singh 94489; Kawnypui-Hartawki, K.P. Singh 93264; Phaileng, D.K. Singh 98969; Chikha, M. Sawmliana 101724.

19. MORINDA L.


Shrubs. Leaves oblanceolate, 10-20 x 3-9 cm, base cuneate, apex acuminate; lateral nerves 4-10 pairs; petioles 0.5-2.5 cm long. Flowers in axillary, pedunculate heads; calyx truncate; corolla salver-shaped, 2-2.2 cm long, greenish-white. Drupes turbinate, 2-2.3 cm in diam.

Fl. & Fr.: March October.


20. MUSSAENDA L.

1a. Calyx lobes deciduous:

2a. Lateral nerves 5-6 pairs

2b. Lateral nerves 7-12 pairs

1b. Calyx lobes persistent.
3a. Leaves brown hairy on the nerves above

3b. Leaves not brown hairy on the nerves above:

4a. Berry arborescente, leaves strigose hairy

4b. Berry not arborescente, leaves glabrous

4. M. ruizburghii

5. M. macrophylla f. grandisepala


Climbing shrubs, 10-14 m high. Leaves elliptic or oblong-lanceolate, 5-15 x 2.8-4 cm, base acute, apex acuminate, coriaceous; lateral nerves 5-6 pairs, glabrous or puberulous; petiole 0.6-1.2 cm long. Flowers in terminal puberulous cymes; calyx campanulate, lobes subulate, deciduous; petaloid segments white, venation green, stalk 2-3 cm long; corolla pubescent. Berries globose-ellipsoid, glabrous, 0.8-1 x 0.5-0.6 cm, pointed at apex abruptly, black.

Fl. & Fr.: March-December.

Lower slopes of the hills. Lungleh 900 m, Gage 186 (fide C.E.C. Fischer, l.c.); Lushai hills, Prazer, s. num (CAL); Chhinchip, 1300 m, Parry (fide C.E.C. Fischer, l.c.) Alzawl, Godfrey 547 (CAL); Slalsuk, Deb 30761; Kheitum, Deb 31187; North Vanalaipai, K.P. Singh 97168; Pheileng, K.P. Singh 97062, Deb 31086; Thanzawl-Bangpui road, K.P. Singh 93835, Kawhikul-Hliapui road, D.K. Singh 94316; Tullukkawn, D.K. Singh 99102;


Shrubs, shoots villous. Leaves elliptic, 4 12 x 2.2-5 cm, base acute, apex acuminate, cuspidate, membranous; lateral nerves 7-10 pairs; petioles 1-2 cm long; stipules recurved. Flowers in terminal corymbose cymes; calyx elliptic, hairy, petaloid, segments deciduous, nerves parallel; corolla orange, tube hirsute, lobes orbicular, throat villous. Berry globose, slightly hairy, 1-1.3 cm in diam.

Fl. & Fr.: July-February.


Shrubs. Branches terete, pilose, young shoots villous. Leaves elliptic or ovate, sub equal, 6-13 x 3-7 cm, base attenuate, decurrent, apex acute or acuminate, margins subundulate, pilose on both surfaces, lateral nerves 9-12 pairs; petioles 0.5-1 cm long; stipules ovate, apex acute, bifid, brownish villous. Flowers in terminal, bracteate cymes; rachis villous; bracts lanceolate, 1-1.3 cm long, bifid; calyx obscure; petaloid segments white, elliptic lanceolate; corolla brownish yellow, tube cylindrical, yellow pilose; lobes 5, rounded, setose outside, glabrous inside. Fruits oblong, baccate, 0.6-0.8 cm long; seeds sub orbicular, minute.

*Fl. & Fr.*: July-November.

Hnathial, 100 m, Parry 275 (fide C.E.C. Fischer, l.c.).


Shrubs. Leaves elliptic, 6-12 x 4-6 cm, base attenuate, apex acuminate, young leaves tomentose; lateral nerves 7-9 pairs, brownish pubescent above; petioles 0.2-1 cm long, brownish pubescent; stipules triangular, bifid at apex. Flowers in diffused sessile cymes; bracts 2, bracteoles 3, linear, brown pubescent; calyx lobes 5 or 6, brownish pubescent; petaloid calyx segment white, elliptic, 7-nerved; corolla yellow, tube cylindrical, hairy outside, glabrous inside. Fruits baccate, black, brown pubescent.

*Fl. & Fr.*: July-October.

North Vanlaiphai, 900 m, Parry 359 (fide C.E.C. Fischer, l.c.).

Endemic.

Shrubs. Leaves elliptic or elliptic-lanceolate, 5-18 x 3-7 cm, base acute, apex acuminate, membranous, setulose above, midrib strigose hairy beneath; lateral nerves 8-14 pairs; petioles 0.3-2 cm long, stipules lanceolate, triangular. Flowers in dense corymbose cymes; calyx lobes filiform; petals oblong, calyx segments white; stalk 1-4 cm long; corolla orange to yellow inside, tube greenish-white, stigmatic. Berry oblong to ellipsoid, areolate above with setaceous calyx lobes.

*Fl. & Fr.*: June January.


1a. Shrubs; lateral nerves 10-12 pairs
1b. Undershrubs; lateral nerves 15-20 pairs

...1. **M. longifolia**

2. **M. mukerjiana**


Shrubs: young shoots pubescent. Leaves elliptic, 8-20 x 2.5-5.5 cm, base acute, apex long acuminate; hairy on both surfaces; nerves 10-12 pairs; petioles 0.7-1 cm long; stipules oblanceolate, apex acute. Flowers in pedicelled, terminal or axillary cymes; bracts glandular; calyx tube globose, lobes 4-6, persistent; corolla yellow, tubular, 1.2-2 cm long, lobes 4-6, triangular; stamens 4-6, ovary 2-celled; ovules numerous. Berries white, globose, 0.6-0.8 cm in diam.

*Fl. & Fr.*: August-November.
15 miles South-East of Lunglei, Cage 150 (CAL); Riang, D.K. Singh 92953; Aizawl, Deb 30522; Lawngtalan, Dutta 33728; Saiha, Dutta 33829.


Undershubs; stems terete. Leaves elliptic, 25-27.5 x 7.5-9 cm, base attenuate, apex acuminate, membranous, glabrous; petioles 2-3 cm long; lateral nerves 15-20 pairs; stipules interpetiolar oblong, apex obtuse, glabrous, 0.8-0.9 x 0.7-0.8 cm. Flowers solitary, pedunculate, bracteate; calyx tube hemispheric, lobes 5, persistent, chartaceous; corolla yellow, fleshy, tube longer than lobes, hispidulous outside, long pubescent within; stamens 5, epipetalous; carpels 2; ovules many in each cell. Berries hemispheric; seeds angular, minute.

Fl. & Fr.: July-November.

Sairep forest, Dutta 33539.

22. MYRIONEURON R. Br. ex Hook. f.


Shrubs. Leaves obovate-elliptic, 10-24 x 5-14 cm, base cuneate, apex acute or acuminate, slightly scabrid beneath; lateral nerves 15-20 pairs; stipules oblong-lanceolate. Flowers in pedunculate corymbose cymes, axillary in the uppermost leaf; bracts lanceolate; calyx lobes subulate, persistent, longer than corolla; corolla white, tubular, lobes hispid; ovary 2-celled; stigma 2, linear-oblong. Berries white, 0.2-0.3 cm in diam.; seeds black, angular, minute.

Fl. & Fr.: October-February.

Aizawl, Godfrey 540 (CAL); Aizawl, Deb 30675.

23. NEANOTIS W. Lewis

1a. Plants rooting from nodes

1b. Plants not rooting from nodes

2. N. hirsuta

1. N. calycina

**Fig. 148.**

Erect herbs. Leaves ovate-lanceolate, 1.5-3 x 0.7-1.5 cm, apex acute, ciliate; petioles 0.2-0.7 cm long; stipules with lateral bristles. Cymes axillary or terminal, peduncled, few-flowered; corolla pinkish white. Capsules didymous, exceeding minute calyx teeth; seeds many.

***Fl. & Fr.; June-October.***

**Jawbawk, K.P. Singh 94239.**


Diffuse herbs; rooting from nodes. Leaves ovate, 1-1.5 x 0.8-1.2 cm, base truncate to rounded, apex acute, membranous, nerves not prominent, petioles 0.3-0.4 cm long; stipules bristled. Flowers in axillary, sessile or peduncled cymes; calyx lobes lanceolate, recurved, longer than fruits; corolla whitish pink, glabrous; ovary 3-celled. Capsules globose, indehiscent.

***Fl. & Fr.; June-September.***

**Darzo, Dutta 34065.**

24. **NEOLAMARCKIA** Bosser

Fig. 148: Neanotis calycina (Wallich ex Hook. f.) W. Lewis
Trees, 35-40 cm tall; branches horizontal; young shoots lenticellate. Leaves ovate, oblong-elliptic or ovate-lanceolate, 17-19 x 8-10.5 cm, apex shortly acuminate, base shortly cuneate, rounded or obtuse, margins undulate or entire; petioles 3-4 cm long. Flowers in heads 4-5.5 cm in diam.; calyx tubular; corolla tubular, 0.7-1 cm long, yellow or reddish orange; lobes 5, oblong; stamens 5, inserted; ovary 4-celled above, 2-celled below; style exserted, ovules many in each cell. Pseudocarps fleshy, orange-red, 6-7 in diam.; seeds minute, angular.

Fl. & Fr.: December-October.


25. NOSTOLACHMA T. Durand


Suberect shrubs; young shoots pubescent. Leaves oblong or elliptic-lanceolate, 8.9 x 0.5-3 cm, apex caudate-acuminate, glabrous on both the surfaces; nerves 6-8 pairs, oblique, pubescent below; petioles 3-6 cm long, pilose; stipules subulate. Flowers in capitate cymes; bracts and bracteoles ovate, opposite, connate below; calyx 4-lobed; corolla orange, throat villous; lobes 4, triangular; ovary 2 celled; ovules 1 in each cell. Drupes ellipsoid, 0.6-0.7 cm in diam.; seeds ventrally concave.

Fl. & Fr.: August-December.

Thehrat, Deb 30356; Tawipui, Dutta 33641; Darlak, Deb 3425; Darlaven. M. Sawmiliana 101725.

26. OPHIOPHIZA L.

1a Bracteoles absent; if present caducous:

2a. Shrubs

2b. Herbs:

...3. O. octroleusa
3a. Cymes leaf opposite: 4. O. oppositifolia
3b. Cymes not leaf opposite:
   4a. Leaves whitish beneath: 7. O. rugosa var. argentea
   4b. Leaves not whitish beneath: 2. O. mungos

1b. Bracteoles present:
   5a. Plants glabrous: 8. O. succirubra
   5b. Plants pubescent:
      6a. Stipules bifid:
         7a. Corolla lobe with a spur at back: 6. O. repens
         7b. Corolla lobe without spur: 9. O. treutleri
      6b. Stipules entire:
         8a. Plants erect: 1. O. fasciculata
         8b. Plants creeping: 5. O. pasciflora


   Erect herbs; stems woody at base, pubescent above. Leaves elliptic or oblong-lanceolate, 5.14 - 2.4.5 cm, base obliquely acute, apex acuminate, glabrous on both surfaces; lateral nerves 10-12 pairs; petioles 1-2 cm long. Flowers in axillary or terminal cymes; corolla white, 1-1.5 cm long. Capsules brownish pink, pubescent.

   Fl. & Fr.: March-August.

   Lunglei, Dutta 33501; Salrep, Dutta 33540.


   Erect herbs. Leaves elliptic or elliptic-lanceolate, 3.5-15 x 2-2.6 cm, base attenuate, apex acuminate; lateral nerves 8-15 pairs; stipules caducous, triangular, truncate or cuspidate. Flowers in subumbellate cymes; corolla white, glabrous outside, pubescent within; stamens 5; ovary 2-
locular; ovules many in each cell. Capsules obovate; seeds many, brown, angular.

*Fl. & Fr.: July-September.*

South Vanlaiphei, Dutta 34006; Saiha, Dutta 33807; Mizo hills, Dutta 34006.


Undershrubs, glabrous. Leaves elliptic or elliptic-lanceolate, 6-12 x 2-6 cm, base acute, apex acuminate, glabrous; lateral nerves 10-15 pairs; petioles 1-2 cm long; stipules lanceolate, bifid. Flowers in axillary or terminal cyms; peduncles short; calyx lobes minute; corolla tubular, lobes recurved, 5, puberulous inside; stamens 5, inserted; ovary 2-celled. Capsules conic-ovoid, compressed, glabrous; seeds numerous, angular, minute.

*Fl. & Fr.: March-September.*

Kheitum, Deb 31214, 31220, 31235.


Herbs; stems rigid, scabrid. Leaves ovate-lanceolate, 4-12 x 1 5-2.5 cm, base acute, apex acuminate; lateral nerves 10-12 pairs; petioles slender, 1-1.5 cm long; stipules subulate. Flowers opposite in the leaf axils, or terminal, pedunculate, bracteate cyme; calyx lobes lanceolate, apex obtuse; corolla white with purple tinge, lobes oblong, obtuse, keeled.

*Fl. & Fr.: May-September.*

Kheatum, Deb 31235; Kawanpui forest, K.P. Singh 96956. 97032.

Creeping herbs. Leaves ovate, 1-2 x 1-1.5 cm, apex obtuse or sub-acute, slightly hairy or not; nerves pubescent beneath. Flowers few in axillary or bracteate cymes; bracteoles linear, ciliate persistent; calyx teeth lanceolate, apex obtuse, pubescent; corolla funnel-shaped, tubes glabrous, lobes hispid outside.

Fl. & Fr.: July-September.

Sairep, K.P. Singh 96705.


Herbs; stems creeping. Leaves elliptic-lanceolate, 5-9 x 1.5-4.2 cm, base attenuate, apex acute or obtuse; lateral nerves pubescent beneath, 7-8 pairs; stipules lanceolate, bifid. Flowers in bracteate cymes, 8-20-flowered; calyx lobes lanceolate; corolla pink or white, tube hairy, lobes erect, shorter than dorsal spur; spur recurved, glabrous within, hispid outside.

Fl. & Fr.: August-March.

Sialtsuk, Deb 30771; Bualpui - Saiha road, K.P. Singh 96901; Kawnpui forest, K.P. Singh 96971; Lawngtalai-Kawlchaw, D.K. Singh 92875.


Erect herbs; stems puberulous. Leaves lanceolate, 3-7 x 1-2.8 cm, base acute, apex acute to acuminate, glabrous above, whitish beneath; lateral nerves 4-7 pairs; petioles 0.5-1 cm long; stipules subulate, toothed. Flowers in short pedicelled, bracteolate, contracted glabrescent or puberulous cymes; calyx lobes 5, subulate, puberulous; corolla white or pinkish white, glabrous outside, pubescent inside, lobes 5, ovate, acute;
stamens 5 at base of corolla tube; inserted; ovary 2-celled; ovules numerous in each cell. Capsules reniform, compressed.

Fl. & Fr.: April-August.

S.loc. Parry 30 (CAL); Lungleh, 900 m, Gage. 188 (fide C.E.C. Fischer, l.c.); Kawanpui forest, K.P. Singh 96968, 94759, 94791.


Erect herbs; stems woody at base. Leaves elliptic or oblanceolate, 4-7 x 2-4.8 cm, base acute, apex acuminate, reddish beneath; lateral nerves 10-13 pairs; petioles 1-2 cm long; stipules linear. Flowers in cymes; calyx persistent; corolla white, 0.7-0.8 cm long. Capsules puberulose.

Fl. & Fr.: August-March.

Chumliang-Meibei, Deb 33327; Tawipui, Dutta 33639; Saiha, Dutta 33809; Tilthlang, K.P. Singh 96641A; Phairuang, K.P. Singh 94221; Hnathial, K.P. Singh 94038, 94426.


Stout pubescent herbs, 30 cm high. Leaves elliptic ovate or lanceolate, 4-9 x 1.8-4 cm, base attenuate, apex acuminate, slightly pubescent on both surfaces; stipules persistent, lanceolate, entire. Flowers in hirsute pedunculate, bracteolate, entire or bifid cymes; bracteoles linear, hispid, persistent; corolla white, funnel-shaped, hirsute outside, glabrous within. Capsules pubescent.

Fl. & Fr.: March-September.

Vawmbuk-Thalthlang, Dutta 33914; Tilthlang, K.P. Singh 94073.

27. OXYCEROS Lour.

Fig. 149: *Ophiorrhiza succirubra* King ex Hook. f.
Fig. 150: Ophiorrhiza treutleri Hook. f.
FLORA OF MIZORAM


Shrubby climbers; stems spinous; spines recurved. Leaves ovate-elliptic, 4-16 x 2-6 cm, coriaceous, glands axillary at nerves beneath; peduncles short. Flowers in trichotomous bracteate cymes; calyx glabrous, lobes wide at base; corolla white, tube slightly longer than lobes: stigma 2-fid. Berries globose, 0.8-1.3 cm in diam., slightly ribbed; seeds rugose.

Fl. & Fr.: April-January.

Between Ridge Camp and Lungsin, Gage 235 (fide C.E.C. Fischer, l.c.); Wenger 3 (CAL); Lengti, Prazer s. num (CAL). Riang, D.K. Singh 98593; Sabual, D.K. Singh 99024; Chhlkhatlang, D.K. Singh 99144; Teirei, D.K. Singh 99193.

28. PAEDERIA L.

1a. Pyrenees not separating from carpophore

1b. Pyrenees separating from carpophore:

2a. Leaves white, villous tumescence beneath

2b. Leaves glabrous beneath


Shrubby climbers, foetid when crushed. Leaves elliptic-ovate or lanceolate, 4-8 x 2-4 cm, base rounded or subcordate, apex acuminate, membranous, glabrous; lateral nerves 4-7 pairs; petioles 2-6 cm long. Flowers in axillary and terminal panicles; calyx campanulate, apically 5-lobed; lobes triangular; corolla funnel-shaped, glandular hairy within. Fruits reddish, ellipsoid; seeds compressed.

Fl. & Fr.: October-April.


Large twinning shrubs: young parts tomentose. Leaves opposite, cordate-ovate to ovate-lanceolate, 6-9 x 4.5-8 cm, base cordate, apex acuminate to acute, margins entire, membranous, scabrous above, densely white, villous-tomentose beneath; lateral nerves 7-8 pairs; petioles 2-3 cm long, tomentose. Panicles trichotomyously branched, 4-12 cm long, axillary or terminal, villous or pubescent. Flowers dull purple; calyx villous, teeth short; corolla funnel-shaped, crimson, pilose inside; lobes trilobulate. Capsules ovoid-oblong, brown, 1-1.3 x 6-7 cm, crowned by calyx teeth; seeds 2, black, compressed, rounded to slightly oblong, 0.6-0.7 x 0.4-0.5 cm, white hairy on both the surfaces.

*Fl. & Fr.*: June-March.

Tuipui-Darzo road, K.P. Singh 96939 A.B.


Shrubby twiners. Leaves ovate or lanceolate, 4-9 x 2.3-6 cm, base rounded or cordate, apex acute, glabrous or slightly hairy on both surfaces; petioles 2-7 cm long. Flowers in axillary panicle; branches shorter and ultimate scorioid; calyx teeth very short; corolla infundibulate. Fruits subglobose, 0.1-0.2 cm in diam., glabrescent.

*Fl. & Fr.*: April-January.

Sairup, Dutta 33586.

29. PAVETTA L.

1a. Flowers in capitulate cymes; lateral nerves 7-9 pairs

1b. Flowers in corymbose panicles; lateral nerves 10-15 pairs

...1. *P. indica*

Shrubs. Leaves elliptic-ovate or oblong, 2-5.5 x 0.7-12.5 cm, base acute, apex acute or acuminate, subcoriaceous, pubescent or glabrous; lateral nerves 10-15 pairs; petioles 0.8-3 cm long; stipules ovate, apex acute. Flowers in terminal or axillary corymbose panicles; calyx truncate or slightly 4-lobed, pubescent; corolla white, fragrant, salver-shaped, tube long, slender, greenish white; stamens 4, near throat; anthers exserted; style exserted. Fruits globose-subglobose, 0.4-0.8 cm in diam., greenish black, polished, 2-seeded.

Fl. & Fr.: December-January.

Lungleh, Gage 82, 176 (CAL); Tiilthlang, K.P. Singh 99641 B, North-Yansaiiphai, D.K. Singh 97171; Champhai to Burma border, Deb 31016; Kawnpui, K.P. Singh 97032.

1a. Fruits black when ripe, globose, 0.7-0.8 cm in diam. ....1.1. var. glabrescens

1b. Fruits greenish purple, subglobose, 0.4-0.6 cm in diam. ....1.2. var. tomentosa


Fl. & Fr.: June-November.

In shady forests, 1050 m. Wenger 214 (fide C.E.C. Fischer, l.c.).


Fl. & Fr.: March-October.

Champhai-Burma border, Deb 31016; Saitang, Deb 30571; Phelileng, K.P. Singh, 97073; Puillo basti, D.K. Singh 94482; Keifeng, 1100 m, M. Sawmiliana 99272.

Shrubs. Leaves elliptic-lanceolate, oblong-lanceolate or elliptic-ovate, 4-15 x 2.5-5.5 cm, base cuneate, apex acuminate; lateral nerves 7-9 pairs; petioles 0.6-2.5 cm long. Flowers in terminal, sessile, capitulate cymes; calyx lobes very short, pubescent; corolla white, 3-4 cm long, tube narrow, lobes spreading. Fruits globose, 0.6-0.7 cm in diam.

Fl. & Fr.: May-February.

Sairep. Dutta 33603.

30. PRISMATOMERIS Thwaites


Shrubs. Leaves elliptic-lanceolate, 6.5-12 x 1.5-4.8 cm, base cuneate, apex acuminate, lateral nerves 6-9 pairs; petioles 0.5-1 cm long; stipules cuspidate. Flowers unisexual in axillary fasciculate cymes; calyx cup-shaped, truncate; corolla white, fragrant, tube 1.8-2.5 cm long, tubes pubescent; anthers linear; stigma bifid. Fruits globose, purplish black.

Fl. & Fr.: May-January.


31. PSILANTHUS Hook. f.

Deciduous shrubs; branches spreading. Leaves variable, elliptic or broadly ovate, 5-9 x 2.5-5.5 cm, base narrowed, apex acute, membranous, glabrous on both surfaces, nerves slightly hairy beneath, 10-15 pairs; petioles 2-3 cm long; stipules setaceous, persistent. Flowers fragrant, axillary or at the ends of branchlets; calyx truncate, apically toothed; corolla white, salver-shaped; tube twisted in bud. Drupes subglobose or ovoid, black; seeds grooved.

Fl. & Fr.: February-December.

Recorded on the basis of C.E.C. Fischer (f.c.).

32. PSYCHOTRIA

1a. Intramarginal nerves conspicuous:

2a. Calyx lobes linear

2b. Calyx lobes triangular

1b. Intramarginal nerves not conspicuous:

3a. Pyrenes planoconvex:

4a. Pyrenes with T-shaped groove ventrally

4b. Pyrenes without T-shaped groove ventrally

3b. Pyrenes not planoconvex:

5a. Pyrenes with 1 dorsal ridge

5b. Pyrenes with 4 dorsal ridges:

6a. Leaves chartaceous

6b. Leaves membranous


Undershubs; young shoots puberulose. Leaves elliptic-lanceolate, ovate or oblong, 15-21 x 3.5-9 cm, base narrowed, apex acuminate, coriaceous, glabrous above, puberulose beneath; lateral nerves 11-13 pairs; petioles 1-2 cm long; stipules bicleft, hyaline, caducous. Flowers in axillary or terminal, peduncled, umbellate cymes; calyx 4-lobed, ciliate; corolla red,
tubes short, throat villous. Fruits yellow to red when ripe; pyrenes obscurely 4-ribbed dorsally.

Fl. & Fr.: March-February.

Morchra, 1500 m, Parry 96 (fide C.E.C. Fischer, l.c.); Thingphal, 1200 m, Parry 442 (fide C.E.C. Fischer, l.c.); Changsil, Prater s. num (CAL); 15 miles South East of Lungleh, Gage 169. (CAL); Mualpheng, M. Sawmiliana 95371.


Shrubs, blaze pale red. Leaves lanceolate or elliptic-lanceolate, 4-14 x 2-5 cm, base narrowed, apex acuminate, membranous, glabrous; lateral nerves 10-14 pairs; petioles 0.5-0.9 cm long; stipules bifid, recurved. Flowers sessile or not, in axillary or terminal, trichotomously branched cymes, calyx lobes longer than tube; corolla hairy within. Fruits globose, reddish-yellow; seeds undulate.

Fl. & Fr.: April-January.

Keifang, M. Sawmiliana 99276.


Shrubs. Leaves opposite-decussate, elliptic, oblong or ovate, 11-25 x 6-12 cm, base acute, apex acuminate, chartaceous, glabrous, slightly glabrescent beneath; lateral nerves 14-18 pairs; petioles 2-2.5 cm long. Flowers in axillary or subterminal, peduncled, capitulate cymes; calyx lobes lanceolate, persistent; corolla tube short, throat villous. Fruits ellipsoid, 0.5-0.7 cm long, yellow to red when ripe.

Fl. & Fr.: January-December.

Saithah, D.K. Singh 92923; Sialsuk, Deb 30727.

Evergreen herbs. Leaves elliptic or oblong-lanceolate, 6-16 x 2-6 cm, base cuneate, apex acuminate, membranous, glabrous; lateral nerves 7-9 pairs; petioles 1-3 cm long. Flowers in terminal or axillary, subcorymbiform cymes; calyx obscurely lobed; corolla white, throat-bearded. Fruits ovoid-oblong, red.

*Fl. & Fr.*: May-January.

Siatsuk, Deb 30727.


Shrubs: branchlets stout. Leaves elliptic-oblong, ovate or obovate. 13-35 x 4-16 cm, base cuneate or attenuate, apex acute or acuminate, coriaceous, glabrous above, puberulose or glabrous beneath; lateral nerves 14-22 pairs; petiole stout, 1-cm long, puberulose; stipules ovate-oblong, 1-2.5 x 0.5-1 cm, villous beneath. Flowers on terminal or axillary, pedicellate corymbose cymes; calyx cupular or obconic, 1.5-2 x 2-2.5 mm, puberulose, apically 5-toothed; corolla 1.5-3 mm long, greenish brown or white, throat velutinous within; lobes 5, ovate-lanceolate or ovate-elliptic, slightly inflexed, glabrous or warty above; stamens 5, inserted. Fruits ovoid, stalked, 0.8-1.3 x 5-56 cm, warty or glabrous above.

*Fl. & Frs.*: May-February

Chushai hills, IC Prawer s.nwm (ICAT)

Herbs. Leaves lanceolate, elliptic or elliptic-ovate, 6-3 x 1-3.5 cm, base acute, apex acuminate, coriaceous, glabrous; lateral nerves 10 pairs, gland pitted at the axil of nerves; petioles 0.3-0.8 cm long; stipules oboval, apex slender, subulate. Flowers in terminal, pedunculate, trichotomous cymes; calyx lobes minute or obscure; corolla throat villous. Fruit black when ripe.

_Fl. & Fr._: June-December.

Teirei, _D.K. Singh_ 99191; Sialsuk, 1340 m, _Deb_ 30710, 30765.


Fig. 151.

Herbs or undershrubs; stems greenish white. Leaves narrowly elliptic, 8-12 x 1-2 cm, base cuneate, apex acuminate, serrulate, subcoriaceous, glabrous, midrib pubescent; lateral nerves joined by intermarginal vein; petioles 0.6-0.8 cm long; stipules 0.6-0.9 cm long, membranous. Flowers in terminal cymes; corolla red. Fruits ellipsoid, 1-1.2 x 0.2-0.4 cm, narrowed at both ends.

_Fl. & Fr._: September-October.

Siachhung, 600 m, *Parry_ 510 (fide C.H.C. Fischer, _l.c._).

33. **RANDIA** L.

1a. Plants unarmed

2a. Corolla yellow

2b. Corolla white

1b. Plants armed:

3a. Leaves pubescent

3b. Leaves glabrous

Fig. 151: Psychotria thomsonii Hook. f.
Trees: Leaves ovate, 4.8-10 x 1.5-3.7 cm, base obtuse, apex acute, glabrous; lateral veins 6-8 pairs, petioles 0.2-0.8 cm long. Flowers in axillary or terminal cymes; calyx lobes dilated, toothed; corolla whitish yellow. Berries globose, 0.8-1 cm in diam., black.

Fl. & Fr.: March-December.

Sialsuk, Deb 30709, 30753.


Trees; branchlets quadrangular, opposite. Leaves elliptic-oblong, 7-16 x 2-7.5 cm, apex acuminate, coriaceous, glabrous; lateral nerves 5-7 on either half; petioles 0.5-1.2 cm long; stipules triangular, apex acuminate, deciduous. Flowers on leaf opposite, scorpioid cymes; calyx pubescent, teeth 5, linear, deciduous; corolla pale yellow, tube short, throat hairy, lobes 5, oblong; anthers subsessile; stigma fusiform, slightly exserted. Berries deep purple to black, globose, 0.4-0.6 cm in diam.

Fl. & Fr.: March-July.

Changsil, towards East on Thavarmah road. J.C. Prazer, s.n. (CAL).


Shrubs; spines axillary, hard. Leaves oblong-obovate or spatulate, 2.4-5 x 1-2.2 cm, base acute, apex acute, pubescent; lateral nerves 5-7 pairs; petioles 0.3-0.8 cm long; stipules ovate, apex acuminate. Flowers solitary or 2-3 together on short branches; calyx tube campanulate, 0.4-0.7 cm long, subglobose; lobes ovate, spatulate, corolla fragrant, whitish yellow, silky hairy, tube as long as calyx; lobes ovate or oblong, spreading; stigma fusiform. Berries subglobose, 0.7-1 cm in diam., yellow.
Fl. & Fr.: April-January.

Recorded on the basis of C.E.C. Fischer (l.c.).


Trees. Leaves elliptic-obovate, 4-20 x 1-6 cm, base narrowed into petiole, apex acuminate, coriaceous; lateral nerves 10-12 pairs; stipules enclosing buds, coriaceous, caducous. Flowers in leaf opposite or axillary cymes; calyx turbinate, lobes minute; corolla yellow salver-shaped; anthers at sinuses of corolla lobes. Berries globose; seeds many, peltate.

Fl. & Fr.: July-January.

Tawkhawl, 600 m, Parry 182 (fide C.E.C. Fischer, l.c.). Sailsuk, Deb 30752, 30719; Aizawl, Deb 30897.

34. RUBIA L.

1a. Leaves not sessile

1b. Leaves sessile

2. R. sikkimensis


Climbers. Leaves ovate, ovate-lanceolate, 1-7.5 x 0.8-2.5 cm, base rounded or subcordate, apex acuminate, hispid above, margins slightly prickly or not; lateral nerves 5-7 pairs; petioles 4-5 cm long. Flowers in terminal, umbellate, panicked cymes; calyx tube globose, lobes obsolete; corolla greenish yellow, hispid, tube short, lobes spreading; stamens adnate to the corolla tube; ovary 2-celled; ovules solitary in each cell. Fruits globose, 0.2-0.4 cm in diam., deep purple, with purple juice.

Fl. & Fr.: June-December.

Thaltlang, Dutta 33926.

Woody climbers; branches scabrid. Leaves 4 in a whorl, sessile, elliptic or ovate-lanceolate, 6-13 x 2-5 cm, base acute or rounded, apex acute or acuminate, scabrid, or pubescent beneath; lateral nerves 3-5 from base. Flowers in large panicked cymes; corolla lobes subulate; anthers globose. Fruits globose, 1-1.2 cm in diam., black.

*Fl. & Fr.*: March-May.

Aizawl, ca 1000 m, Parry 641 (*vide* C.E.C. Fischer, *l.c.*); Aizawl, Godfrey 625 (CAL); Mizo hills, Deb 31022 (CAL).

35. **SAPROSMA** Blume


Shrubs. Leaves whorled, variable, oblanceolate to elliptic, 7-9 x 2-4 cm, base cuneate, apex acuminate, glabrous; lateral nerves 7-8 pairs, nerves scaberulose beneath; petioles 0.4-0.8 cm long; stipules lanceolate, apex pointed. Flowers recurved in trichotomous or corymbosely fasciculate cymes; calyx truncate, lobes 4-6; corolla white, tube funnel- shaped, lobes 4; stamens 4 on corolla throat; ovary 2-celled; ovules solitary in each cell. Drupes black.

*Fl. & Fr.*: May-December.


36. **SILVIANTHUS** Hook. *f.*

Shrubs; young shoots scabrid with reddish brown hair. Leaves elliptic-obovate or lanceolate, 8-17 x 4-11 cm, base acute, apex acuminate, margins toothed, membranous, glabrous; lateral nerves 10-12 pairs; petioles 1.4-3 cm long; stipules membranous. Flowers in axillary or terminal, bracteate cymes; calyx purple, accrescent, lobes 5; corolla white, funnel-shaped, tube hairy inside, lobes short, reflexed; stamens 2; anthers linear-oblong; ovary 2-celled; stigma spindle-shaped. Capsules globose, 0.4-0.6 cm in diam.; seeds black, apex obliquely truncate.

Fl. & Fr.: May-October.

Recorded on the basis of C.E.C. Fischer (i.e.):

37. SPERMACOECE L.

1a. Stems hispid; seeds brown
1b. Stems glabrous; seeds black


Procumbent herbs; stems hispid. Leaves sessile, obovate, elliptic or oblong, 1.3-3.5 x 1-1.5 cm, apex acute, coriaceous, scabrid above; lateral nerves 5-6 pairs; stipules cupular, bristly hispid. Flowers whorled; bracteoles filiform. Calyx tube short, lobes linear-lanceolate, corolla white, tube dilated upwards; lobes 4; stamens 4; ovary 2-celled. Capsules hispid; seeds brown glossy.

Fl. & Fr.: July-December.


Erect herbs; stems glabrous. Leaves ovate or elliptic, 2-5 x 0.8-1.2 cm, apex acute or acuminate, glabrous or scabrid above, margins scabrid;
nerves pubescent beneath; petioles 0.1-0.2 cm long; stipules bristly. Flowers in bracteate heads; bracteoles tiliform; calyx lobes 4, unequal; corolla white, tube dilated above, throat pubescent, lobes 4; stamens 4; ovary 2-celled; ovule 1 in each cell. Fruits with 2 mericarps, dehiscent ventrally; seeds oblong, black, granulate.

*Fl. & Fr.*: July-December.

Bunglang, *Deb* 31449.

38. **UNCARIA** Schreb.

1a. Lateral nerves 6-8 pairs:

2a. Leaf apex opaque, acuminate

2b. Leaf apex not opaque, acute

1b. Lateral nerves 4-6 pairs:

3a. Corolla lobes silky hairy

3b. Corolla lobes glabrous

4. **U. sessiliflorus**


Climbing shrubs. Leaves ovate lanceolate, 6-8 x 2-3 cm, base rounded, apex opaque acuminate, pubescent above; lateral nerves 6-8 pairs. 1-1.3 cm long; stipules 2-lobed. Flowers in axillary pedunculate panicles; bracts obtuse; calyx tube funnel-shaped, lobes minute; corolla 1-1.4 cm long, pubescent. Capsules sessile or not.

*Fl. & Fr.*: March-July.

Lungleh, *ca* 1000 m, *Gage* 28 (*fide* C.E.C. Fischer, *l.c.*).


Climbing shrubs. Leaves elliptic lanceolate, glabrous on both surfaces; lateral nerves 5-6 pairs; stipules bifid. Flowers in axillary or terminal
peduncled panicles; bracts obtuse; calyx slightly lobed; corolla glabrous. Capsules sessile.

_Fl. & Fr._: October February.

Lungleh, 900 m, _Wenger 386 (fide C.E.C. Fischer, _l.c._)._  


Fig. 152.

Woody climbers; young shoots rusty tomentose. Leaves ovate-lanceolate or elliptic, 9-17 x 4-7.6 cm, base subcordate, rounded, apex acute; lateral nerves 6-8 pairs; petioles 0.2-0.7 cm long. Flowers in axillary and terminal, pedunculate, bracteate heads; calyx lobes linear; corolla hirsute outside. Capsules spindle-shaped, stalked.

_Fl. & Fr._: December-February.

Khetum, _Deb 31196._


Fig. 153.

Climbers; young shoots red. Leaves elliptic, 5-7 x 3-4.5 cm, base rounded, apex acuminate, coriaceous, glabrous; lateral nerves 4-5 pairs; petioles 1-1.5 cm long. Flowers in axillary and terminal, pedunculate bracteate heads; calyx lobes minute, rounded; corolla yellow, tube slender, lobes silky.

_Fl. & Fr._: March-April.


_Note:_ _Uncaria crinita_ Desv. has also been recorded by C.E.C. Fischer (1938), but no specimen or literature pertaining to this species is available. The specimen, ought to have been collected and deposited in _CAL_ (Fischer, _l.c._), could not be located.
Fig. 152: Uncaria macrophylla Wallich
Fig. 153: Uncaria sessilifructus Roxb.
39. **WENDLANDIA** Bartling ex DC.

1a. Lateral leaf nerves up to 20
1b. Lateral leaf nerves up to 12:
   2a. Corolla tube less than twice the length of lobes
   2b. Corolla tube twice the length of lobes:
   3a. Calyx hairy
   3b. Calyx glabrous

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Evergreen trees or shrubs. Leaves lanceolate, 6-8 x 1.7-2.5 cm, base acute, apex acuminate, coriaceous; lateral nerves 8-12 on either half; petioles 0.4-1.2 cm long; stipules pointed, spiny. Flowers sessile, in many-flowered, pyramidal panicles; calyx tube globose, lobes as long as tube, unequal; corolla tube slender, lobes oblong. Capsules globose, seeds minute.

*Fl. & Fr.*: September-February.

Mizo hills, Dutta 88404; North-Vanlaipahi, D.K. Singh 93060.


Evergreen trees. Leaves ovate-elliptic, 6-8 x 3-4 cm, base cuneate, apex acuminate, glabrous above, pubescent beneath; lateral nerves 8-10 pairs; stipules with flattened appendages, triangular, interpetiolar. Flowers in fascicles, sessile; calyx puberulose, lobes triangular, apex obtuse; corolla white, tube 0.3-0.4 cm long, pilose within at mid region; lobes ovate; style 2-lobed, exserted.

*Fl. & Fr.*: January-May.

Bunglang, Deb 31466; Hauvung, Deb 31407 (CAL); Near Sherchihp, B.M. Wadhwa 96606; Chhinchip, 1500 m, Party 601 (jide C.E.C. Fischer, l.c.); 7 miles from Changsle, Prater s.n. (CAL).

Shrubs. Leaves elliptic ovate or obovate, 8-16 x 4-8 cm, base acute, apex acuminate, pubescent beneath or not; lateral nerves pubescent beneath, 6-7 pairs; petioles 1-1.5 cm long; calyx glabrous, lobes minute; corolla white, tube slender.

*Fl. & Fr.*: March-September.

Lungleh, 900 m, *Gage* 34 (CAL); Kawnpui village forest, *K.P. Singh* 96991; Sanghai I.B., *K.P. Singh* 96830.


*Fig. 134.*

Trees. Leaves elliptic-lanceolate, 7.5-16 x 2-5.6 cm, base cuneate, apex acute, coriaceous, glabrous; lateral nerves 10-12 pairs; petioles 0.4-1.2 cm long; stipules brown, ovate, apex acute, caducous. Flowers fragrant, in pedicellate panicles; pedicelli hairy; calyx lobes deltoid, apex acute, glabrous; corolla white, tube 3 times longer than calyx; stamens sessile; anthers near throat. Capsules globose.

*Fl. & Fr.*: September-February.


Recently, J.H. Lalrammngiisowa (*Ethnobotany* 11: 63. 1999), reported *Tarena odorata* (Roxb.) Robins as new ethno-medicinal plant record from the state.
Fig. 154: Wendlandia wallichii Wight & Arn.
DIPSACACEAE

(K.P. Singh)

DIPSACUS L.


Erect, prickly, perennial herbs, up to 2 m tall. Leaves simple or lower ones pinnatifid, lanceolate to ovate-lanceolate, 8-22 x 2-7 cm, base connate, acute to acuminate at apex, hairy above, scabrous beneath. Flowers in cymose-subglobose heads, creamy-white or light purple. Heads terminal, solitary or many, 1-3 cm across; peduncles up to 30 cm long; bracteoles ciliate, obovate-lanceolate. Achenes 8-ribbed, crowned and enveloped by an epicalyx.

*Fl. & Fr.*: September-December.

Champhai, 1500 m, *Parry 347* (*fide* C.E.C. Fischer, *l.c.*).

ASTERACEAE

(D.K. Singh)

1a. Plants with milky latex; corolla of disc florets ligulate:

7a. Florets always yellow:

3a. Radical leaves pectioled; involucral bracts
   2-3-seriate; achenes narrowed into a stout beak ... 50. *Youngia*

3b. Radical leaves sessile; involucral bracts
   multi-seriate; achenes without beak ... 43. *Sonchus*

2b. Florets pale, blue or reddish:

4a. Stems usually paniculately branched; involucral bracts multi-seriate,
   bracts bristly hairy; florets pale-blue ... 13. *Cleistobia*

4b. Stems usually solitary; involucral bracts 1-3-seriate,
   bracts glabrous or hispid; florets dull red, bluish,
   whitish or purple:
5a. Outer involucral bracts ovate, oblanceolate or
linear-oblong; florets dull red; achenes with a
prominent beak … 31. Lactuca

5b. Outer involucral bracts ovate-lanceolate; florets
whitish, bluish or purple; achenes without beak … 38. Premnanthes

1b. Plants without milky latex;
corolla of disc florets not ligulate:

6a. Heads with true rays:

7a. Disc florets usually biliabiate:

8a. Shrubs or small trees … 33. Leucomeris

8b. Scapigerous or subscapigerous herbs:

9a. Heads homogamous; many-seriate:
involucral bracts many-seriate … 3. Ainsliaea

9b. Heads heterogamous, solitary;
involucral bracts 2-seriate … 37. Filago palmata

7b. Disc florets usually tubular, not biliabiate:

10a. Plants strongly aromatic; leaves pinnatifid,
entire or dissected; involucral bracts imbricate,
dry, scariosus:

11a. Heads numerous, in racemes,
padicles or corymbs … 6. Artemisia

11b. Heads solitary:

12a. Leaves toothed or lobed; heads
sessile or subsessile … 12. Centipeda

12b. Leaves pinnatifid; heads pectuncled … 17. Cotula

10b. Plants not strongly aromatic; involucral
bracts not as above:

13a. Receptacles with paleaceous bracts
or bristles; anthors not tailless

14a. Leaves usually opposite; pappus
comprising scales, awns or rigid bristles:

15a. Heads dioecious:
16a. Involutural bracts of male flowers laterally connate; involucres in fruits forming vase-like conceptacle, spineose or tuberculate near apex  
   4. Ambrosia

16b. Involutural bracts of male flowers free; involucres in fruits with glochidiate spines  
   ... 49. Xanthium

15b. Heads monoecious:

17a. Leaves deeply divided or pinnatifid:

18a. Achenees beaked  ... 16. Cosmos

18b. Achenees not beaked  ... 7. Eides

17b. Leaves simple or pinnately compound:

19a. Achenees of disc florets dorsally compressed or angular; pappus present or absent:

20a. Achenees with lacerated awn-like appendages or 2, strigose apical awns  ... 44. Symedrella

20b. Achenees with 8-20 fimbriate, ciliate or laciniate scales  ... 26. Calinsoga

19b. Achenees of disc florets rounded or laterally compressed; pappus absent or of two scales:

21a. Outer involucral bracts clavate; inner bracts enclosing the achenees  ... 41. Siegesbeckia

21b. Outer involucral bracts not clavate; inner bracts not enclosing the achenees:

22a. Leaves usually alternate; involucral bracts 2-5-seriate  ... 46. Tithonia

22b. Leaves opposite; involucral bracts 1-2 seriate:

23a. Anther base sagittate:

24a. Leaves pubescent with verrucose hairs; ray florets 2-3-seriate  ... 21. Eclipta

24b. Leaves hispid; ray florets several  ... 48. Wedelia

23b. Anther base entire, truncate or obtuse:

25a. Heads radiate; involucre broadly ovoid or subglobose; anther base obtuse  ... 8. Blainvillea
25b. Heads radiate-discoid; involucres campanulate; anther base truncate

14b. Leaves usually alternate;
pappus setose or of capillary bristles:

26a. Ray florets absent:

27a. Receptacles flat; achenes with thickened margins

27b. Receptacles conical or convex;
achenes without thickened margins

26b. Ray florets present:

28a. Pappus short, paleaceous, caducous or absent

28b. Pappus long, firm, persistent.

29a. Heads radiate; ligules longer than involucres

29b. Heads discoid or with indistinct ray florets;
ligule more or less as long as involucres:

30a. Usually erect herbs

30b. Scandent or erect shrubs

13b. Receptacles naked:

31a. Involved bracts 1-3-seriate; more or less equal, not imbricate:

32a. Ray florets white, yellow or orange coloured;
pappus absent

32b. Ray florets usually yellow or orange coloured;
pappus comprising numerous soft, capillary bristles:

33a. Anther base with united auricles

33b. Anther base sagittate or obtuse:

34a. Heads heterogamous

34b. Heads homogamous:

35a. Heads bracteolate; florets blue,
pink or purple

35b. Heads bracteolate;
florets yellow, brick red:
36a. Annuals; receptacles convex, naked  ...  18. Crassocephalum
36b. Perennials; receptacles flat, pitted  ...  28. Gymura

37b. Involucral bracts many-seriate, unequal, imbricate:

37a. Leaves usually radical, upper alternate; heads radiate; receptacles flat or tumid, pitted or ancolate  ...  30. Inula
37b. Leaves alternate; heads disciform; receptacles flat, naked or pitted:

38a. Anther base sagittate or 2-lobed, auricle not tailed:

39a. Stems grooved; leaves deeply incised; florets golden yellow  ...  10. Blumeopsis
39b. Stems winged; leaves almost entire; florets purple  ...  32. Laggera

38b. Anther base always sagittate; auricle tailed:

40a. Leaves usually toothed or lobed; involucral bracts soft or herbaceous; achenes angled, ribbed  ...  9. Blumea
40b. Leaves quite entire; involucral bracts scariosus, inner with ptilaloid limb; achenes not ribbed:

41a. Hermaphrodite florets sterile; styles subcapitate or 2-lobed  ...  5. Anaphalis
41b. Hermaphrodite florets fertile; styles truncate or capitate  ...  27. Gnaphalium

6b. Heads without true rays:

42a. Leaves and bracts spinose; corolla of outer disc florets larger, much like ray florets; involucral bracts multi-seriate:

43a. Receptacle densely bristly or palesaceous; anthers tailed at base:

44a. Leaves armed  ...  14. Cirsium
44b. Leaves unarmed:

45a. All leaves pitted; involucral bracts hoary; receptacular bristles shorter than pappus  ...  39. Sanasarea
45b. Caudine leaves sessile; involucral bracts glabrous; receptacular bristles longer than pappus  ...  29. Hemistepta
43b. Receptacles naked; anthers not tailed:

46a. Herbs; leaves radical; heads
   many in glomerules, 2-4-flowered  ...  22. Elephantopus

46b. Herbs, shrubs or trees; leaves alternate;
   heads corymbose or panicked, many-flowered  ...  47. Vermonia

42b. Leaves and bracts not spinose;
   corolla of outer disc florets not enlarged,
   not like ray florets; involucral bracts 1-seriate:

47a. Twiners; involucral bracts 3-5  ...  35. Mikunia

47b. Erect herbs or shrubs; involucral
   bracts more than 5:

48a. Achenes smooth, tuberculate or muricate  ...  1. Adenostemma

48b. Achenes glabrous or hairy on the ribs:

49a. Pappus comprising 4-5 scales or
   clavate hairs  ...  2. Ageratum

49b. Pappus comprising 10 or more
   capillary hairs  ...  25. Eupatorium


Adenostemma laevia (L.) O. Kuntze, Rev. Gen. Pl. 1: 304. 1891;
90. 1776. Adenostemma viscosum var. laevia Hook.f., Fl. Brit. India 3:
242. 1881, pp. Vailentho (Lushai).

Erect-rarely decumbent, annual or perennial herbs, up to 1 m; plants
glabrous below, viscidly pubescent above. Leaves opposite-alternate, sessile
or petiolate, elliptic-deltoid, or oblong-ovate, 2.5–14 x 1.5–7.5 cm, rounded
or alternate at base, acute- acuminate at apex, margins serrate. Heads in
terminal, corymbose panicles, 80 or more-flowered, 0.4–1 x 0.5–0.7 cm.
Involucral bracts 2-seriate, oblong, acute or obtuse, connate at base,
glabrous, glandular or scabrous. Flowers white. Achenes laxly triangulate,
glandular-tuberculate; pappus clavate.

Fl. & Fr.: March–January.
2. AGERATUM L.


Hispidate, aromatic annual herbs; stems up to 1.5 m tall, with finely striate, suberecte branches. Leaves opposite, or alternate above, petioled, broadly triangular or ovate-rhomboid, 2.5 x 1.5 x 5.5 cm, subacute-obtuse, base subtruncate or acute, margins crenate-serrate pilose above, glandular punctate beneath. Heads 0.4-0.8 cm across, clustered in axillary and terminal corymbose panicles. Involucral bracts 2-3-seriate, elliptical-lanceolate, minutely pubescent. Florets white, purple or bluish. Achenes 5-angled, blackish brown; pappus 5-awned, sometimes serrate below.

Fl. & Fr.: October-April.

Common in open wastelands. About 24 km South-east of Lungleh, ca 1000 m, Gage 165 (CAL); Wenger, s. loc. 418 (fide C.E.C. Fischer, l.c.); Lungleh-Hauzrang, Deb, 31406. Tilthang, K.P. Singh 94067, 94069; Sairep, K.P. Singh 94164.

3. AINSLIAEA DC.


Fig. 155.

Scapigerous, perennial herbs, 0.3-1.5 m tall; stems erect. Leaves radical, alternate, petioled or sessile, cordate-ovate 3-8 x 2-5 cm, acute, base narrowed, margins sparsely serrate, white tomentose beneath, petiole broadly winged. Heads up to 1.5 cm across, fascicled in a spike or racemose panicles. Involucral bracts multi-seriate, linear-lanceolate, acute, reddish green. Florets pinkish-blue. Achenes oblongo-elliptic, 10-ribbed, silky; pappus pale-brown.
Fig. 155: Ainsliaea latifolia (D. Don) Sch.-Bip
Fl. & Fr.: March-August.

Common in moist places in Quercus forests. Tulipang 1600 m, Parry 474 (fide C.E.C. Fischer, l.c.), Blue Mountains, 1200-2100 m, Wenger 377. 419 (fide C.E.C. Fischer, l.c.); Blue Mountains, Mao 10130.

4. AMBROSIA L.


Small shrubs, up to 2 m; stems often reddish, finely striate, white pubescent. Leaves alternate in the upper part, opposite in lower part; lower ones oblance-ovate, 3-15 x 1.5-6 cm, pinnately lobed, upper ones elliptic-lanceolate, acute, entire, pubescent beneath. Heads in lax, panicled racemes, buds white, with pungent smell. Involucral bracts 1 seriate, ovate triangular, hairy. Achenes ovoid or topshaped, brown; pappus of simple hairs.

Fl. & Fr.: October-December.

Champhai, 1500 m, D.K. Singh 94519.

5. ANAPHALIS DC.

1a. Plant parts covered with white, silky wool. Leaves broadly elliptical

1b. Plant parts glandular-pubescent. Leaves linear-lanceolate


Stout, woolly herbs or undershrubs; stems simple 0.6-1.2 m. Leaves alternate, suberect, oblance-lanceolate or subspathulate, obovate, 2-10, 0.5-2 cm, obtuse-acute, base semiamplexicaul, entire, coriaceous. Heads 0.6-1 cm across, in axillary or terminal clusters or corymbs. Involucral bracts multi-seriate, suborbicular-ovate, obtuse, scarious, inner with a petaloid limb. Florets pale-white or light yellow. Achenes minute, black; pappus white.
Fl. & Fr.: May-February.

Common in shady places. Champhai, 1600 m, Parry 351 (CAL); Lushai Hills, Duna 33902; Pharphak, B.M. Wadhwa & K.P. Singh 96836; Saiyep, K.P. Singh 94166.


Annual herbs or sometimes undershrubs; stems up to 1.5 m tall, erect, often much branched, more or less winged. Leaves suberect spreading, alternate, sessile, linear-lanceolate, 2.5-7 x 0.15-0.8 cm, acute, base narrowed, semiaplexical or auricled, sometimes decurrent, margins recurved, cottony or puberulous beneath. Heads up to 1 cm across, in terminal, corymbose panicles. Involucral bracts multiseriate, elliptic-oblong, obtuse, apices reddish. Florets yellowish white. Achenes up to 0.5 mm long; pappus white.

Fl. & Fr.: August-November.

Common on shady slopes. Wenger s.loc. 1600 m, 374 (fide C.E.C. Fischer, l.c.).

6. ARTEMISIA L.


Perennial, aromatic herbs or undershrubs, up to 1.5 m; stems erect or ascending, often branched, rooting at base. Leaves alternate, sessile, planati-pedate or bipinnate, up to 18 cm long, with the segments oblong-lanceolate, entire, sparsely hairy or glabrous above, densely white woolly beneath. Heads sessile, up to 0.4 cm, solitary or fascicled in terminal, spiciform, racemoid panicles. Involucral bracts few, ovate-oblong, obtuse,
densely lanate, scarious margined. Achenes oblong-ellipsoid, up to 1.2 mm long, glabrous, finely striate.

_Fl. & Fr._ January-April.

Phongmai, 2000 m, _Parry 656 (side C.E.C. Fischer, l.c.); Blue mountain, alt 1950 m, _Mao 107166 (ASSAM)._  

7. **BIDENS L.**

1a. Leaves bipinnately compound; involucral bracts 3-seriate  ... _B. bipinnata_  
1b. Leaves trifoliolate; involucral bracts 1-seriate  ... _B. pilosa_  


Highly variable, erect, pilose-pubescent, annual herbs, 15-60 cm; stems obscurely striate. Leaves opposite, bipinnately compound, 3-10 cm long, segments linear-lanceolate, or ovate, acute, margins entire or distantly toothed. Heads solitary, on 5-25 cm long, axillary peduncles. Involucral bracts 3-seriate, outer small, ligulate; inner oblong-triangular or ovate, with scarious margins. Florets white, yellow. Achenes black, up to 1.5 cm long, slender, topped with 2-4, filamentous, spinescent awns; pappus 2-3 mm long, retrorsely bristly.

_Fl. & Fr._ Throughout the year.

Champhai, 1500 m, _D.K. Singh 94787._


Highly variable, erect, glabrous-pubescent annual herbs or undershrubs; stems 15-60 (-100) cm. with finely striate, angulate branches. Leaves opposite, petiolar, trifoliolate, lobes broadly ovate-lanceolate or elliptic, 1.5-7.5 x 0.5-2 cm, acute, obtuse, margins crenate, surface glabrous or puberulous. Heads solitary, up to 1.5 cm across, on long, unequal

Fl. & Fr.: April-November.

Helio Hill, Lungleh, 1200 m, Gage 86 (CAL); Thenzawl, K.P. Singh 93853, North Yampaia, D.K. Singh 93302.

Leaves lavished by horses.

8. BLAINVILLEA Cass.


Rigid, scabrous, annual herbs, 30-60 (-120) cm high; branches opposite-alternate, terete. Leaves opposite or distally alternate, petioled, ovate-lanceolate or rhomboid-ovate, 5-9 x 4-5 cm, base cuneate, acute-acuminate at apex, margin crenate-serrate, sparsely hairy. Heads peduncled, axillary and terminal, up to 1 cm across, radiate-subdisciform. Involucral bracts 2-3-seriate; outer ovate; inner oblong. Flowers pale yellow. Achenes cuneate-truncate, dorsally compressed, 3-4-angled; pappus of 2-5, unequal bristles.

Fl. & Fr.: September-February.

Tilthang, K.P. Singh 94071. Scarce.

9. BLUMEIA DC.

1a. Herb, pappus always white:

2a. Stems simple or branched from base

3a. Corolla lobes glabrous

4a. Plants strongly smelling like camphor or terpentine; stems runcinate, glandular ... 6. B. lacera

4b. Plants nonaromatic; stems tomentose-villous ... 5. B. hieracifolia
3b. Corolla lobes glandular or pubescent

5a. Leaves lyrate-pinnatifid, grey pubescent on both the surface, corolla lobes pubescent ... 4. B. fistulosa

5b. Leaves entire dentate, villous-pubescent beneath; corolla lobes glandular ... 2. B. clarkei

2b. Stems corymbose or paniculately branched above:

6a. Radical leaves incised-pinnatifid or lyrate. Involvular bracts linear-lanceolate, dorsally villous; corolla lobes pubescent ... 7. B. laciniata

6b. Radical leaves sinuate-dentate. Involvular bracts slender, ciliolate; corolla lobes glandular ... 9. B. membranacea

1b. Undershrubs or shrubs; pappus white, pale or red:

7a. Stems rambling or scandent, pappus white ... 10. B. riparia

7b. Stems erect; pappus pale or red:

8a. Plants glabrous or puberulous; petioles appendaged; corolla lobes papillose; pappus pale ... 8. B. lanceolaria

8b. Plants woolly tomentose or white pelleted; petioles lyrate-lobed, laciniate or appendaged; corolla lobes glandular or hairy; pappus red:

9a. Plants strongly aromatic, woolly tomentose; petioles lyrate-lobed; corolla lobes glandular ... 1. B. balsamifera

9b. Plants nonaromatic, white pelleted; petiole laciniate or appendaged; corolla lobes hairy ... 3. B. densiflora


Large, short-lived, aromatic, tomentose-woolly shrubs, 1-4 m tall; stems erect, repeatedly corymbose or paniculately branched above. Cauleine leaves petioled, ovate-oblung, or lanceolate, 8-20 x 2-12.5 cm, acuminate at both ends, margins serrulate, villous on both the surfaces; petiole lyrate-lobed. Heads 0.6-0.8 cm across, in sessile or peduncled, terminal, corymbose, panicules. Involvular bracts 2-seriate; outer ovate, acute, slightly pubescent; inner linear-elongate, ciliate-pilose. Florets yellow. Achenes cylindrical, 10-ribbed, pilose; pappus dull-white to reddish.
Fl. & Fr.: January-May.

Along Karnaphuli River, 1600 m, Gage 81mm.


Perennial, pubescent herbs, 0.6-2 m tall; stems simple, flexuous, erect or climbing, terete. Leaves short petioled, membranous, lanceolate, or obovate-oblongate, 4-16 x 1-4 cm, acute-apiculate, margins distantly serrate-dentate, with macronate teeth, villous-pubescent beneath. Heads 1-1.5 cm across, sessile or peduncled in axillary clusters, forming narrow, elongate spikes. Involutural bracts slender, linear-lanceolate, purple tipped with ciliate margins and apices, dorsally pubescent. Florets yellow. Achenes strongly ribbed, obscurely silky or glabrate; pappus white.

Fl. & Fr.: January-April.

Lushai Hills, Godfrey 649 (CAL).


Erect, annual herbs or undershrubs, 0.75-1.8 m tall; stems stout, angulate, strigate, white pelted. Leaves petioled, elliptic-lanceolate, 15-45 x 2.5-5 cm, acute, margins serrate or pinnatifid, puberulous above, white felted beneath; petioles laciniate or sometimes appendiculate. Heads up to 0.6 cm across, sessile, in white felted or tomentose rounded clusters or panicles. Involutural bracts rigid, 2-seriate, narrow lanceolate; outer villous; inner pilose-ciliate. Florets yellow. Achenes cylindrical, 10-ribbed, pubescent; pappus red.

Fl. & Fr.: November-April.

Common along the road sides. Helio Hill, N.E. of Lunglei, 1200 m, Gage 98 (CAL); Sialsuk-Aizawl Road; Deb 30825; Sialsuk, Deb 30820.


Pubescent or velutinous annual herbs, 0.3-1.2 m tall; stems erect, slender, stricate. Lower leaves petioled, elliptic-obovate, oblong-lanceolate, or oblanceolate, 3-15 x 0.5-5 cm, margins serrate or lyrate or pinnatifid; upper leaves sessile, oblong, margins incised, grey pubescent on both the surface. Heads up to 0.6 cm across, sessile, axillary clusters along the branches. Involucral bracts spreading, subulate-lanceolate, purplish, grey villous, scariosous margined. Florets yellow. Achenes, 8-10 ribbed, pilose or glabrous; pappus white.

*Fl. & Fr.*: January-May.

Darzo, 1600 m, Parry 504 (*fide* C.E.C. Fischer, l.c.); *s.loc.* Wenger 408, 411 (*fide* C.E.C. Fischer, l.c.).


Small, medium, tomentose-violaceous herbs, 15-55 cm; stems erect, laxly stricate. Lower leaves petioled, elliptic-oblong, or obovate, 3-16 x 0.5-5.5 cm, margins serrate-dentate, surface villous-pilose above, white or brown villous beneath; upper leaves sessile, obovate-oblong, almost entire. Heads 1-1.8 cm across, in axillary and terminal clusters. Involucral bracts purple, lanceolate, acuminate, densely villous outside. Florets purple. Achenes narrow-oblong, 8-10 ribbed, pilose; pappus white.

*Fl. & Fr.*: April-August.

*s.loc.*, Wenger, 1300 m, 412 (*fide* C.E.C. Fischer, l.c.).

Stems up to 2.5 m tall, robust, panicularly branched above. Leaves mostly cauline, surface with yellowish-brown spreading hairs beneath. Heads strictly in large, terminal clusters.

_Fl._ & _Fr._: February-May.

Common along the ridges on roadside. North Vanalimphai, 1600 m, D.K. Singh 93071.


Slender, villous, glandular or incanus herbs, with strong camphor or turpentine like aroma; stem erect, 0.3-1 m high, branched. Lower leaves petioled, deeply incised or lyrate lobed; upper leaves sessile, elliptic or obovate, 2.5-15 x 1-5 cm, obtuse, margins serrate-dentate or sinuate lobed, narrowed at base, pubescent or pilose or densely villous on both the surface. Heads 0.6-0.8 cm across, solitary or few clustered into short, upper axillary cymes or terminal, spiciform panicles, sometimes corymbose. Involutural bracts narrow, acuminate, hairy or glabrescent. Florets yellow. Achenes shortly oblong, 4-angled, glabrate, pappus white.

_Fl._ & _Fr._: December-April.

Helio Hill, Lungleh, 1200 m, Gage 89 (CAL).


Stout, pubescent or laxly tomentose herbs or shrubs 0.2-1.5 (-5) m tall: stems erect, corymbosely or panicularly branched above. Leaves radical and cauline, 3.5-25 x 1-12 cm; lower leaves petioled, elliptical-oblong, narrowed into petiole, incised-pinnatifid or lyrate; upper ones sessile, oblong-ovate, obtuse or acute, margins distantly dentate, attenuate at base, villous or pubescent on both the surface. Heads up to 0.8 cm across, fascicled in large, dense terminal panicles. Involutural bracts lineal-
lanceolate, acuminate, purplish, dorsally villous. Florets yellow. Achenes elongate, 8-10-ribbed, silky; pappus white.

*Fl. & Fr.*: February-June.

*S. loc.*, Wenger, 1300 m, 413 (*fide* C.E.C. Fischer, *i.e.*).


Large undershrubs or shrubs; stems hollow, branched above. Coriaceous leaves petiolated, oblong-lanceolate or oblanceolate, 5-30 x 0.6-8 cm, acuminate at both ends, margins minutely serrate-dentate, glabrous or rugose above, glabrous or puberulous below; petiole appendaged. Heads up to 1 cm across, subsessile or peduncled, in terminal panicles. Involucral bracts 2-seriate; outer ovate-lanceolate; inner lanceolate with scarious margins. Florets yellow; corolla lobes papillate. Achenes oblong, ribbed, pubescent; pappus pale.

*Fl. & Fr.*: February-April.

Phuldungsei, 800-1200 m, *M. Sawantiana* 99297.


Pubescent and glandular herbs, up to 1.5 m tall; stems erect, slender, much branched. Leaves large, membranous; lower ones petiolated, oblong-elliptical, ovate-lanceolate or obovate, 3.5-15 x 1.5-6 cm, margins irregularly or sinuate-dentate or lyrate lobed, upper ones smaller, sessile, oblong, elliptic, serrate, villous or pubescent on both the surfaces. Heads up to 0.6 cm across, clustered in terminal panicles, with the branches of panicles glandular and clothed with spreading hairs. Involucral bracts slender, ciliolate. Florets yellow. Achenes 8-10-ribbed, with spreading hairs; pappus white.

*Fl. & Fr.*: February-May.
Fig. 156: Blumea lanceolaria (Roxb.) Druce
FLORA OF MIZORAM

Common along roadsides and clearings. South Lushai Hills, 700-1300 m, Wengar 405, 406 (fide C.E.C. Fischer, l.c.).


Scandent or scrambling, glabrous shrubs, up to 2 m tall; stems sulcate, with terete, grooved branches. Leaves short petioled, oblong-lanceolate, or elliptical-obovate, 2-12 x 0.8-4.5 cm, short acuminate, margins denticulate, acute or rounded at base, coriaceous, surfaces glabrate and faintly coloured on maturity. Heads 0.8-1.5 cm across, clustered in terminal and axillary paniculate racemes. Involute bracts multisieriate; inner narrow-oblong, obtuse, chartaceous; outer obovate, pubescent. Florets yellow. Achenes cylindrical, 10-ribbed, pilose; pappus white, scabrous.

Fl. & Fr.: February-October.

S. loc., Parry, s.num (fide C.E.C. Fischer, l.c.).

10. BLUMEOPSIS Gagnepain


Erect, glabrous or pubescent annual herbs; stems 45-75 cm high, simple or corymbosely branched above, grooved. Leaves radical and alternate, ovate-lanceolate, obovate or spatulate, 2.5-6 x 0.5-3 cm, obtuse-mucronate, base oblong-cordate or semiamplexicaul, margins sharply denticulate, surface tomentose. Heads up to 1 cm across, in axillary and terminal panicled cymes. Involucral bracts multisieriate, chartaceous, glabrous or puberulous, outer obovate-oblong, more or less obtuse. Florets bright golden yellow. Achenes minute, cylindrical, 10-ribbed, subglabrate; pappus white.

Fl. & Fr.: November-March.
Common along roadsides and in forest clearings. *Wenger s.luc., 700-
1350 m 404 (fide C.F.C. Fischer, l.c.)*.

11. **CALENDULA** L.


Erect, annual, hispidate-pubescent herbs; stems 30-45 cm high, corymbose-branched above. Leaves alternate; lower leaves spatulate; upper elliptic-lanceolate, 2-8 x 0.3-2.5 cm, acute-obtuse, cordate or amplexicaul at base, margins entire or sinuate-dentate, both the surfaces hispidate. Heads solitary, up to 5 cm across, terminal. Involucral bracts multiserrate, linear-ovate, acuminate. Florets yellow or purplish yellow. Achenes naviculate, muricate on dorsal surface; pappus absent.

*Fl. & Fr.: December-April.*

Cultivated as an ornamental plant. Lungleh. *Dutta 33449.*

12. **CENTIPEDA** Lour.


Annual, prostrate, glabrous or sparsely woolly herbs; branches slender, excessively numerous, 7-12 cm high. Leaves alternate, obovate-oblong, or sometimes more or less obtangulate, 0.25-1.5 x 0.25-0.5 cm, acute or subtruncate, base narrowed, margins irregularly toothed, sparsely woolly beneath. Heads sessile, globose, 0.25-0.4 cm across, solitary, axillary. Involucral bracts 2-seriate, rotundate, glabrous. Florets pale green to yellow. Achenes terete or slightly striate, with few, erect, minute hairs; pappus absent.

*Fl. & Fr.: February-August.*

In moist places. Darzo, *Dutta 34067.*
13. CICERBITA Wallrath


Sparingly villous or glabrous herbs; stems 8-90 cm high, soft, terete, branched above, with erect or decumbent branches. Leaves excessively variabile, short petioled; cauline leaves pinnatifid, 10-25 x 1.5-4.5 cm, lobes ovate-orbicular; upper leaves sometimes entire, with simple or dialated winged petiole having entire-dentate auricle. Heads 6-16-flowered, 1-1.8 cm across, on pendulous peduncles in terminal,paniculate cymes. Involucral bracts 2-seriate, outer smaller, lanceolate, inner up to 6, subequal, narrowly oblong. Florets pale-blue. Achenes narrow-elliptic, compressed, 5-ribbed on either face, blackish; pappus deciduous, 2-seriate, inner silky white, outer yellowish, numerous, united.

Fl. & Fr.: December-March.

Common in rock crevices. Blue Mountains, 2100 m. Weng er 378 (fide C.E.C. Fischer, l.c.).

14. CIRSIUM Mill.

1a. Plants glabrous or glabrescent ... 2. C. shansiense

1b. Plants villous or cottony:

2a. Outer involucral bracts with acicular tips; the rest aristate or acuminate ... 2. C. interpositum

2b. Involucral bracts all spinulose ... 3. C. vertum


Erect, robust thistles; stems cottony. Cauline leaves sessile, pinnatifid; lobes lanceolate, acute, spinescent, setulose above, white tomentose below. Heads larger, up to 5 cm across, fascicled, glabrous. Involucral bracts imbricate, glabrous; outer outermost bracts shorter with acicular spines;
inner wavy, acuminate or aristate. Florets purplish, up to 3 cm long. Achenes oblong, compressed, up to 5 mm long; pappus up to 2.5 cm long.

*Fl. & Fr.*: June-September.

On open hill slopes. Phongpui, ca 1980 m, Mao 107151.

*Uses*: Leaves and seeds edible.


Erect, glabrous or glabrescent thistles, 0.9-2.4 m tall; stems striate, simple or fastigately branched above, with erect, slender branches. Leaves sessile, lanceolate, or linear oblong, 2.5-8 x 1-3 cm, sinuately lobed or pinnatifid. margins ciliately or spinescent, subdecurrent at base, scaberulous or smooth above, white tomentose beneath. Heads solitary, long-peduncled, up to 2.5 cm across. Involucral bracts numerous, adpressed, oblong-lanceolate, obtuse, with spinulose tips; inner linear, with intlexed acute tips. Florets purple. Achenes minute; pappus with clavellulate spines.

*Fl. & Fr.*: September-December.

Tuisenhar, 1300 m, Parry 328 (fide C.E.C. Fischer, l.c.).


Erect, tall, stout thistles, 1-2.5 m tall; stems villous, branched above. Leaves radical, pinnatifid up to the middle or base, up to 30 cm long, with distant lobes; lobes lanceolate-laciniate; cauline leaves sessile, ovate-
lanceolate, up to 15 cm long, sinuate-pinnatifid, auricled or amplexicaul at base, spinous-setulose above, white tomentose beneath. Heads large, 2.5-6.5 cm across, solitary or fascicled, inclined. Involucral bracts narrow, spinescent, glabrous inner most linear, acuminate. Florets purple or whitish pink. Achenes oblong-ovoid, obtuse margined; pappus brown or almost white, with nonclavellulate apex.

Fl. & Fr.: August-May.

Hmuifang, 1600 m, Parry 291 (fide C.E.C. Fischer, i.c.); Phongpui, 2000 m, Parry 557 (fide C.E.C. Fischer, i.c.); Thalhlang, Dutta 33963.

15. **Conyza** Less.

1a. Leaves obovate-spatulate, or oblong:

2a. Plants glabrous, villous or woolly.
   Involucral bracts 1-seriate  ... 3. *C. japonica*

2b. Plants hoary-pubescent.
   Involucral bracts more than 1-seriate  ... 5. *C. stricta*

1b. Leaves linear-lanceolate:

3a. Plants up to 1.8 m. Achenes obovate-lanceolate, usually minutely pilose; pappus red  ... 4. *C. leucantha*

3b. Plants up to 1 m. Achenes narrow-oblong, glabrous; pappus straw-yellow or white:

4a. Leaves sessile, surface setulose-scabrous; pappus straw yellow  ... 1. *C. bonariensis*

4b. Leaves petiolate, surface villous-pilose; pappus white  ... 2. *C. camadensis*


Profusely branched, hirsute herbs; stems erect, up to 1 m high, stout, with small branches. Leaves sessile, alternate, linear-oblong or lanceolate, 2.5-11 x 0.2-1 cm, acute to subacute, with entire or coarsely dentate
margins, surface setulose-scabrous. Heads 0.5-1 cm across, in terminal or axillary racemes or corymbbs. Involucral bracts 2-3-seriate; outer smaller, narrow-lanceolate, acuminate, with scarious margins. Florets light yellow. Achenes minute, narrow-oblong, compressed, glabrous; pappus 1-seriate, straw yellow or dull white.

*Fl. & Fr.*: February-September.


*Fig. 157.*

Annual pubescent, hissute or glabrous herbs; stems 0.15-1 m high, slender, highly branched, with erect branches. Leaves petioled, alternate, linear or linear-lanceolate, 1-3.5 x 0.5-0.8 cm, obtuse, margins more or less entire or finely dentate, surface villous-pilose. Heads small, 0.4-0.6 cm across, in elongated, branched, leafy panicles. Involucral bracts 2-3-seriate, outer smaller, narrow, acuminate, with more or less scarious margins, dorsally pubescent. Florets pink. Achenes narrow-oblong, compressed, more or less glabrous; pappus 1-seriate, white or dull white.

*Fl. & Fr.*: May-October.

In open places along roadsides. Bilkawthli-Kolasib, 550 m, *D.K. Singh* 93110.


Erect, annual or binniel herbs; stems 15-30 cm high, simple, usually unbranched. Leaves sessile, in basal rosette, few cauline, elongate-elliptical, oblong-lanceolate, or obovate-spathulate, 2-70.5 x 0.5-2 cm, acute or obtuse, margins crenate-serrate, cuneate or semiamplexicaul at base,
Fig. 157: Conyza canadensis (L.) Cronq.
villous beneath. Heads up to 0.8 cm across, densely glomerulate in terminal panicles. Involucral bracts narrow-lanceolate, with scarious margins, densely villous or pubescent. Florets white. Achenes compressed, narrow, obovate-lanceolate, nearly glabrous or minutely pilose; pappus 1-seriate, small, reddish brown.

Fl. & Fr.: April-October.

South Vanlaiphei, Nitu 34993.


Tall, annual herbs, 0.6–1.8 m, with conspicuously strigate, viscid, puberulous, branched stems. Leaves sessile-subsessile, narrow-lanceolate, 3–8 x 1.2–2.5 cm, acute-acuminate at both ends, margins serrulate, surface puberulous-viscidulous. Heads up to 0.8 cm across, glomerulate in large terminal and upper axillary panicles. Involucral bracts 10–15, more or less 2-seriate, lanceolate, acuminate, margins scarious, puberulous outside. Florets pink. Achenes compressed, narrow, obovate-lanceolate, glabrous or minutely pilose; pappus red, 1-seriate.

Fl. & Fr.: January-March.

Common in dry places. Zongling, 1300 m, Parry 494 (fide C.E.C. Fischer, i.e.); Aizawl protected forest, Deb 30538; Aizawl, Deb 30661; Aizawl-Sibuliang road, G.K. Deka 5240.


Hairy or scaberulusly pubescent herbs; stems erect, 30–60 cm high, simple or fastigately branched, with the branches corymbose above. Leaves linear-oblong to obovate-spatulate, subacute-obtuse, attenuate at base, margins entire, dentate or pinnatifid, surface velutinous or pubescent. Heads minute, ca 0.3 cm across, numerous, in peduncled corymb. Involucral bracts more or less 2-seriate, subequal, narrow-lanceolate, acuminate.
dorsally pubescent. Achenes narrowly elliptical, compressed, puberulous; pappus 1-seriate, red

_Fl. & Fr.:_ April-October.

Helio Hill, Lungleh, 1200 m, Gage 88 (CAL).

16. COSMOS Cav.


Glabrous-pubescent, slender annual herbs; stems 0.9-3 m tall, angulate, with more or less cupular nodes. Leaves opposite, petioled, 2-8 x 1.5-5 cm, bipinnately dissected, lobes elliptic, linear-lanceolate or filiform, with entire margins. Heads 2-8 cm across, terminal or 2-3 times branched stalks. Involucral bracts 1-seriate, subulate, ligulate-lanceolate, acute-acuminate. Ray florets pinkish purple. Disc florets yellowish white. Achenes linear, costate, with an abrupt beak, glabrescent; pappus 2-4, retrorsely barbed.

_Fl. & Fr.:_ November March.

Cultivated as an ornamental. Lungleh, _Dutta_ 33474.

17. COTULA L.


Erect, glabrous-villous, annual herbs; stems 15-20 cm high, striate, purplish tinged, rooting at lower nodes. Leaves alternate, sessile, pinnatisect, or simple above, 1-7.5 cm long, lobes linear, linear lanceolate, aristate or with 1-2 spinules towards apex, surface glabrous. Heads globose-subglobose, up to 0.6 cm across, solitary on axillary or terminal peduncles. Involucral bracts 1-2-seriate, oblanceolate-obtuse, slightly connate at base, glabrous. Florets yellow. Achenes angled, minute, without wings, glandular-pubescent; pappus short, auriculate or often absent.

_Fl. & Fr.:_ September-February.
Panchagram. Deh 30463.

18. CRASSOCEPHALUM Moench.


Erect, annual herbs, 0.3-1.2 m high; stems sparingly branched, striate-angulate. Leaves alternate, elliptic-oblong or obovate, 4-15 x 0.6-5.5 cm, acute-acuminate, conspicuously tapering at base, margins irregularly pinnatifid, or dentate, glabrous. Heads drooping, 0.5-1.5 cm, in terminal corymbs. Involucral bracts 2-seriate, linear-oblong, with serrate margins. Florets reddish-yellow. Achenes minute, linear-oblong, ribbed; pappus white, cottony.

Fl. & Fr.: May-December.

Common in moist places along roadsides. Saiha-Bhalpuri, Dutta 33852; Bilkawthil-Kolasib, 550 m, D.K. Singh 93112; Tilthlang, K.P. Singh 94068; Thaizawl, K.P. Singh 94231; Thalithlang, K.P. Singh 96764.

Uses: Leaves eaten as vegetables.

19. CYATHOCLINE Cass.


Erect or procumbent, aromatic, annual herbs; stems up to 60 cm high, scabrous or pubescent, slender, sulcate, often reddish-purple tinged. Leaves alternate, sessile; lower obovate-lanceolate; upper lyrate-pinnatisect, 2-14 cm long; lobes oblong 0.5-2.5 x 0.2-1.5 cm, serrate-dentate or lobed, surface viscidly glandular-pubescent. Heads globose-subglobose, up to 0.8
Fig. 158: Crassocephalum crepidioides (Benth.) S. Moore
cm across, in terminal, rounded corymbose panicles. Involutural bracts 2-seriate, linear-lanceolate, acute, with ciliated or pilose margins. Florets rose-purple. Achenes minute, oblong, smooth, brownish; pappus absent.

Fl. & Fr.: September - February.

Along the Koladyne river, ca 700 m, Parry, 583 (fide C.E.C. Fischer, l.c.); s.loc., Parry s.simn. (CAL).

20. DICHOCEPHALIA L'Herit. ex DC.


Annual, erect or decumbent, glabrous-pilose, aromatic herbs, 30-60 cm high. Leaves obovate-lyrate, or pinnatifid, 2-8 x 0.4-1.5 cm, subacute at apex, margins irregularly dentate-crenate or serrate, puberulous or pilose on both surfaces. Heads very small, up to 0.5 cm across, in terminal, racemose panicles. Involutural bracts 2-seriate, ovate, margins fimbriate. Florets yellowish-purple, gland-dotted. Achenes compressed, smooth; pappus absent.

Fl. & Fr.: May-February.

S. loc., 350-1300 m, Wenger 423 (fide C.E.C. Fischer, l.c.); s.loc., Wenger, s.n. (CAL); Aizawl, Godfrey 518 (CAL); Theiriat, Deb 31261; North Vanlaihpi 1600 m, D.K. Singh 93310.

21. ECLIPTA L. nom. cons.


Streisogly hirsute annual herbs; stems erect or procumbent, 15-60 cm high, branched, rooting at lower nodes. Leaves opposite, short-petioled, linear, elliptic, or oblong-lanceolate, 2.5-10 x 0.5-2.5 cm, acute-acuminate,
base cuneate, margins subdenticulate. Heads subglobose, 0.5-2 cm across, solitary or in pairs, axillary and terminal. Involucral bracts 2-seriate, herbaceous, ovate, obtuse-acute, outer large, broad. Florets white, or yellow. Achenes narrow, triquetrous more or less laterally compressed, verrucose; pappus obsolete or 2, aristate.

Fl. & Fr.: August-December.

In open shady places. Kolasib, Dutta 33255; Leite, Dutta 34097; Kolasib-Buliang, D.K. Singh 93161.

22. ELEPHANTOPUS L.


Rigid, scabrous, perennial, rosetted herbs, 20-40 cm high, once or twice dichotomously branched. Radical leaves rosetted as base, sessile, obovate-lanceolate, or obovate-oblanceolate, 3.5-16 x 0.5-4 cm, short acuminate, base cuneate-attenuate, margin serrate; cauline leaves alternate, few, undersurface pale-brown tomentose. Heads solitary, glomerate, up to 2 cm across, terminal on 2.5-8 cm long peduncles, each subtended by 3-8 cordate, foliaceous, conduplicate, bracts. Involucral bracts 4-seriate; outer subulate; inner lanceolate. Florets pink-purple. Achenes truncate, 10-ribbed, pilose; pappus 1-seriate, white, comprising 4-5 bristles.

Fl. & Fr.: May-October.

Common in open places. Tlabung, 150 m, K.P. Singh 94302; Tuichang-Hnathial, K.P. Singh 96915.

23. EMILIA Cass.

1a. Plants small; leaves alternate, entire ... 1. E. scabra

1b. Plants large; leaves both radical and alternate, lyrate-pinnatifid ... 2. E. sonchifolia

Fig. 159: Elephantopus scaber L.
Annual herbs, 15-45 cm high. Leaves alternate, clavate-spathulate, or broadly ovate, 3-9 x 1.5-3.5 cm, sometimes elliptic-lanceolate, 7-5-7 x 0.7-1.5 cm, acute-obtuse, base stem clasping, entire, scabrous beneath. Heads 0.7-1.8 cm long, often solitary, terminal. Involucral bracts 1-seriate, oblong, acute. Florets pinkish-purple. Achenes truncate, 5-gonate, straw coloured; pappus soft-white.

Fl. & Fr.: February-August.

In open clearings, along roadsides and in river beds. *s.lac.*, 350-1300 m, *Wenger*, 420 (fide C.E.C. Fischer, l.c.).


Slender, puberulous or scabrid, spreading annual herbs, up to 1 m high; stems often branched at base. Leaves radical and alternate, slightly petioled, obovate, 3-8.5 x 1-6 cm, dentate or lyrate-pinnatifid, upper leaves oblanceolate, sparsely dentate, amplexicaule or auricled at base. Heads up to 1.2 cm, in lax corymbs. Involucral bracts linear-oblanceolate, acute, connate at base. Florets pinkish-yellowish. Achenes small, 5-angled; pappus conspicuous, soft, white.

Fl. & Fr.: November-February.

In wastelands and along the roadsides. Sairep-Tawipui, *Dutta* 33616.

24. ERIGERON L.

1a. Inflorescence a corymbiform panicle

1b. Inflorescence solitary or few, in axillary panicles


Erect, annual, sparsely hissute herbs, 30-55 cm high. Leaves broadly ovate or obovate towards base, 2-5 x 1-2.5 cm, dentate or subentire towards apex; cauline leaves ovate-lanceolate. Heads 0.5-1 cm across, in corymbiform panicles. Ray florets white. Disc florets yellow. Achenes minutely pubescent; pappus comprising minute scales and hairs.
Fl. & Fr.: May-September.

Tilthang, K.P. Singh 96653.


Erect, slender herbs, 20-55 cm high, with smooth, glabrescent stems. Leaves sessile, alternate, linear-lanceolate, or elliptic-lanceolate, 3-5 x 0.2-8 cm, acute, cuneate at base, margins entire or 1-2 toothed, villous on both the surfaces. Heads 0.5-0.8 cm across, 30-40-flowered, in terminal and upper axillary panicles. Involucral bracts 2-seriate, linear-oblong, acute, with scarious margins, outer smaller. Florets white. Achenes minute, truncate; pappus dull-white, hairs long.

Fl. & Fr.: April June.


25. EUPATORIUM L.

1a. Achenes with shining glands ... 2. E. nodiflorum

1b. Achenes without glands:

2a. Herbs; stems, pedioles and bracts glandular hairy; achenes glabrous ... 1. E. adenophorum

2b. Undershrubs; stems villose-pubescent; achenes hairy on the ribs ... 3. E. odoratum


Highly branched viscid, herbs or undershrubs, up to 2 m tall; stems slightly striate, puberulous. Leaves opposite, subsessile, ovate-triangulate, or rhomboid, 2-8 x 0.5-4 cm, base cuneate, narrowed, acute-acuminate at apex, margins dentate, pubescent on both the surfaces. Heads in dense axillary and terminal corymbs, 0.4-0.6 cm. Involucral bracts 3-seriate, outer oblong-spathulate, with glandular hairs, inner oblong-lanceolate, or ovate. Flowers white. Achenes 0.25-0.4 cm long, conspicuously 5-angled, black; pappus hairs dirty white.
Fl. & Fr.: April-October.

Common in shady places. Zawbak, K.P. Singh 94236; Hnalial, K.P. Singh 94012.


Coarse, perennial herbs; stems erect, 25-90 cm high, sparsely branched, puberulous or pubescent. Leaves opposite, or sometimes alterante, ovate-elliptic, elliptic-lanceolate, 2-12 x 0.8-2.5 cm, acute or cuneate at base, acute-acuminate, margins coarsely serrate, pubescent along the nerves beneath. Heads 5-flowered, up to 0.6 cm across, in dense terminal corymbs. Involucral bracts 3-seriate, 6-8, oblong-lanceolate, glabrous or pubescent, reddish. Florets purplish white. Achenes truncate, 5-ribbed, black; pappus filiform, rigid, white.

Fl. & Fr.: September-December.

Charmphal, 1600 m, *Parry 345* (*fide* C.E.C. Fischer, *l.c.*); Lushai Hills, *Parry s.n.* (CAL).


Erect or straggling, aromatic undershrubs, 1.5-3 m tall; stems repeatedly branched, villose-pubescent, with angulate branches. Leaves opposite, petioled, triangular-ovate, deltoid, or ovate-lanceolate, 3.5-12 x 2-6 cm, acute-long acuminate, cuneate at base, margins irregularly dentate-serrate or sometimes entire, pubescent beneath. Heads more or less cylindrical, up to 1.5 cm long, 20-30-flowered, in terminal, usually trichotomous corymbs. Involucral bracts multi-seriate, ovate-lanceolate, acute or obtuse. Florets whitish purple, odorous. Achenes small, narrow-oblong, 5-angled, blackish; pappus stiff, white.
Fl. & Fr.: September-March.

Common, in open places and along the forest fringe. Saza, 700 m, Parry 434 (fide C.E.C. Fischer, l.c.); Lushai Hills, Parry, s. nom. (CAL); s. loc., 1300 m, Wenger, 425 (fide C.E.C. Fischer, l.c.); Khetum, Deb 31194, Zotethlang, 1700 m, K.P. Singh & D.K. Singh 94586.

Uses: Leaf extract used as antiseptic for healing wounds.

26. GALINSOGA Ruiz et Pavon


Weak, hispid-glabrous annual herbs; stems erect, 20-40 cm high. Leaves opposite, petioled, oblong-ovate, or ovate-lanceolate, 1-5 x 0.4-1.4 cm, acute-obtuse, base acute or cuneate, margins more or less entire or sub-serrate, membranous. Heads up to 0.8 cm across, solitary, axillary and terminal. Involutral bracts 1-2-seriate, broadly ovate-elliptic, subacute, striate. Flores pink purple-yellowish. Achenes ovate, angled, dorsally compressed; pappus scales long.

Fl. & Fr.: June-December.

Common, in exposed or partially shady places. Sairep, Dutta 33503; Kolasib, D.K. Singh 93004; Zotethlang, 1700 m, K.P. Singh & D.K. Singh 94599; Aizawl, M. Sawmliana 95545.

27. GNAPHALIUM L.


Erect, densely woolly or pubescent annual herbs, 10-30 cm high; stems branching both from base and above, with ascending branches. Leaves alternate, oblong-spathulate; upper leaves lanceolate, 2-5 x 0.2-0.8 cm,
obtuse, narrowed at base, margins more or less entire, glaucous pubescent on both the surfaces. Heads campanulate, up to 0.5 cm, clustered in terminal or axillary corymbos or fascicles. Involucral bracts multi-seriate, oblong-elliptic, obtuse, shining yellow-brownish. Florets bright yellow, with pinkish apices. Achenes brown, tubercled or with minute curved bristles; pappus yellowish.

*Fl.* & *Fr.* February-October.

Common, in forest clearings, roadsides and gardens. About 24 km South-east of Lunglei, Gage s.n. (s.l. C.E.C. Fischer, i.c.); s.loc., Wenger 407 (s.l. C.E.C. Fischer, i.c.); North Vanlaiphei, Deb 31147.

*Uses:* Flowers and leaves edible.

**28. GYNURA** Cass.

1a. Involucral bracts villous-pubescent ........................................... 3. *G. nepalensis*

1b. Involucral bracts glabrous:

2a. Petiole base dilated-auricled, surface puberulous ................................... 1. *G. auriculata* var. *puberula*

2b. Petiole base narrow-auricled, surface glabrous:

3a. Succulent herbs; leaves alternate-spiral; achenes glabrous ................................ 2. *G. bicolor*

3b. Small shrubs; leaves subradial; achenes villous ........................................... 4. *G. pseudochina*


Herbs; stems 0.3-1 m high, suffrutescence towards base; branches elongated, somewhat devoid of leaves, with corymbiferous apices. Leaves elliptic or oblong-obovate, 5-12 x 1.5-4 cm, petioled, pubescent-pilose on both surfaces; petiole base dilated-auricled, sparsely dentate. Heads in puberulous-pilose peduncled corymbos. Involucral bracts glabrous. Florets orange coloured. Achenes ribbed, glabrous or minutely papillose in between the ribs.
Fl. & Fr.: September-December.

S. loc., Parry s.n. (CAL).


Succulent, erect herbs, up to 3 m tall; stems striate-turreted, corymbose-branching, glabrous. Leaves sessile, alternate-spiral, oblong-oblanceolate, 8-30 x 2-5-7 cm, acute-acuminate, contracted or auricled at base, margins irregularly dentate, surface not smooth. Heads 1-2.5 cm long, in large, terminal leafy panicles. Involutic bracts 1-seriate, linear-lanceolate, 0.8-1.2 cm long, margins scariosus. Florets orange-red. Achenes narrow, many-ribbed, glabrous; pappus hairs white, multi-seriate.

Fl. & Fr.: May-October.

North Vanlaiphai, 1600 m, D. K. Singh 97174; Phongpui, 2100 m, B. M. Wadhwa & K. P. Singh 96860; Kawnhkol-Hlialpui, K. P. Singh & D. K. Singh 94366; Keifang, 1200 m, M. Sawmliana 99286; Blue mountain, 950 m, Mao 107158.


Annual or perennial, suffrutescent herbs or undershrubs; stems 1-2 m tall, corymbose-branching above, villose-pubescent. Leaves alternate, petioled, oblong-ovate, upper sometimes elliptic-lanceolate, 1.5-20 x 2-5.5 cm, acuminate, at both ends, margins serrate-dentate: petiole dilated-auricled at base, both surface puberulous. Heads 1.6-2.5 cm across, in axillary and terminal racemose panicles. Involutic bracts 1-seriate, oblong, acuminate, villose-pubescent, margins scariosus. Florets yellow. Achenes glabrous or minutely papillose in between the ribs; pappus white.

Fl. & Fr.: January-June.

Sherkor, 1300 m, Parry 456 (fide C. E. C. Fischer, l.c.); Aizawl, 1000 m, Parry 646 (fide C. E. C. Fischer, l.c.); Aizawl, 1000 m, G. K. Deka 23341.
Fig. 160: Gynura bicolor (Roxb. ex Wild.) DC.

Small, glabrous or pubescent shrubs, with tuberous roots; stems finely striate, 30-90 cm high, distally corymbose branched. Leaves subradical, oblong-elliptical, 5-18 x 2-4.5 cm, long acuminate, base angustate, margins sinuate-subpinnatifid, spinescent, pubescent on both surface. Heads 1-1.5 cm long, in terminal, corymbose panicles. Involucral bracts 1-seriate, 0.6-1.5 cm long, oblong-lanceolate, glabrous. Florets yellow. Achenes fusiform, many-ribbed, slightly villous; pappus white, multi-seriate.

*Fl. & Fr.*: April-October.


29. **HEMISTEPTA** Bunge *ex* C.E.C. Fischer *et* Mey


Villous or pubescent annual herbs; stems 0.3-2.5 m tall, grooved, corymbose branched above. Leaves lyrate-pinnatifid, upper ones sinuate-lobed, sometimes entire, 10-20 cm long; radical leaves petioled; cauline sessile, may or may not be pubescent above, white tomentose below. Heads long peduncled, up to 2.5 cm across, in corymbose panicles. Involucral bracts multiserrate, glabrate; outer ovate, obtuse; inner linear-lanceolate, acuminate. Florets pale red. Achenes obovoid, 10 ribbed, glabrous; pappus hairs slender, uniseriate, white, plumose.

*Fl. & Fr.*: September-February.

Blue Mountains (Phongpui), *Wenger* 376, 422 (sede C.E.C. Fischer, I.C.)
30. INULA L.

1a. Herbs; involucral bracts narrow, outer most narrow, tubaccous ... *3. I. nervosa*

1b. Shrubs or undershrubs; involucral bracts linear-sulbarate, outer gradually smaller:

2a. Heads panicked or racemose ... *4. I. rubricaulis*

2b. Heads corymbose or solitary:

3a. Leaves alternate; pappus dirty white ... *1. I. cappa*

3b. Leaves spirally arranged; pappus pale-brown ... *2. I. eupatorioides*


Stout, woolly undershrubs or shrubs; stems 1-2.5 m tall, corymbosely branched, with very stout branches. Leaves alternate, oblong, narrowly elliptic or elliptic-lanceolate, 5-15 x 1.5-5 cm, acute-subacute, base acute or rounded, margins distinctly cuspidate-serrate, upper surface pubescent with adpressed mammillate hairs, undersurface silky villous or woolly. Heads up to 1 cm across, in much branched, terminal and axillary corymbs. Involutural bracts multi-seriate, linear-lanceolate. Florets deep yellow. Achenes minute, ribbed, silky; pappus dull white, plumose.

*Fl. & Fr.:* August-February.

Common along the roadsides. Aizawl-Champhai, 1500 m, Deb 30890; Champhai-Zote, 1650 m, K.P. Singh & D.K. Singh 94578.


Stout, woolly shrubs; stems up to 3 m tall, with stout, pubescent branches. Leaves spirally arranged, shortly petioled, lanceolate or elliptico-oblong, 3.5-25 x 1.2-7.5 cm, acuminate, base acute or rounded, margins irregularly dentate, scaberulous above, pubescent beneath. Heads up to 0.8 cm across, numerous in terminal or upper axillary corymbs. Involutural bracts multiseriate, subulate, tomentose. Florets bright yellow. Achenes
Fig. 161: *Inula eupatorioides* DC.
narrowly oblong, adpressed silky-pubescent; pappus straw yellow or reddish with brown tinge, plumose.

Fl. & Fr.: November-March.

Sid Mojo, 1600 m, Parry 427 (side C.E.C. Fischer, l.c.), Blue mountain ca. 1975 m, Man 107122.


Perennial, pubescent-hirsute or villous and glandular herbs; stems 0.3-0.9 m high, erect, simple-branched, flexuous. Leaves sessile-subsessile, lanceolate-elliptic, 5-10 x 1.8-4 cm, acute at both ends, margins denticulate, scaberulous or scabrid above; nerves subparallel with the margins. Heads 1.8-2.5 cm across, solitary or corymbose, long peduncled. involucral bracts linear-lanceolate, ciliate-pilose, erect or recurved; outermost foliaceous. Florets yellow. Achenes narrowly oblong, silky; pappus dull white, straw yellow or reddish.

Fl. & Fr.: October-April.

Common on grassy slopes. About 96 km South-east of Lunglei (Blue Mountains, 2100 m), Wenger 375 (slde C.E.C. Fischer, l.c.).


Glabrous shrubs; stems 0.75-2 m tall, erect, more or less striated, with long, slender, flexuous branches. Leaves sessile-subsessile, elliptic-lanceolate, 8.15 x 2.5-4 cm, acuminate, attenuate at base, margins serrate-denticulate, membranous, nerves almost parallel with the margins, glabrous, or minutely punctate. Heads up to 1.8 cm across, 3-5 together in axillary racemes. Involucral bracts green or purplish, subulate or linear-lanceolate, acuminate-aristate. Florets shining yellow. Achenes narrowly oblong, slender, silky; pappus white, hairs not thickest at tips.
Fl. & Fr.: February-May.

S. loc., Parry, s. num. (CAL).

31. LACTUCA L.


Tall, glabrous or villous, annual-biennial herbs; stems 0.45-1.5 m tall, erect, sometimes stout at base, panically branched above. Leaves radical and alternate, 5-10 x 3-6 cm; lower leaves petiolate, pinnate or lyrate-pinnatifid, terminal lobes, large, triangular-ovate or deltoid, base cordate, hastate or truncate, margins serrate; upper leaves ovate-lanceolate. Heads 3-4-flowered, narrow, 0.6-1 cm long, pendulous, in large, open panicles. Involucral bracts few-seriate, minute, oblong; inner 5-6, with dilated tips. Florets dull red. Achenes oblong-oblanceolate, obscurely ribbed, brown; pappus dirty white, deciduous.

Fl. & Fr.: August-November.

Common on moist, shady slopes. Aizawl, 1000 m, Parry 407 (fide C.E.C. Fischer, l.c.).

32. LAGGERA Sch.-Bip. ex Koch

1a. Plants conspicuously hairy;
   cauline wings entire; leaves dentate
   ... 1. L. alata

1b. Plants glabrous or pubescent;
   cauline wings deeply dissected; leaves lyrate pinnatifid
   ... 2. L. crispata


Stout herbs; stems robust, up to 1 m high, much branched, pubescent or tomentose, with entire wings. Leaves alternate, oblong to subovate, sessile, 2.5-9 x 0.5-2 cm, more or less obtuse, base decurrent, margins
dentate, surfaces hispid or puberulous. Heads axillary, on winged peduncles or in terminal racemes, solitary or gamminate, 0.6–1.8 cm across, drooping. Involucral bracts multiseriate; outer oblong, acute, slightly pubescent; inner rigid, chartaceous, glabrous. Florets purplish. Achenes cylindrical, 10-striate, pilose; pappus white.

Fl. & Fr.: August-January.

Champhai, 1600 m, Parry 344, Zunling, 1300 m, Parry 495 (fide C.E.C. Fischer, l.c.); s.l. 500–1300 m, Wenger 403, 414 (fide C.F.C. Fischer, l.c.).


Slender, much branched, glabrous or puberulous herbs, 0.6–1.5 m tall; stems with deeply lobed or dissected wings. Leaves alternate, sessile, oblong-acuminate, 6–19.5 x 1–5.5 cm, lunate-pinnatifid, base decurrent, surface glabrous or puberulous. Heads up to 2 cm across, in axillary leafy panicles. Involucral bracts multiseriate, glabrous, rigid, outer smaller, inner elongated. Florets purple-pale mauve. Achenes cylindrical, 10-costate, pilose; pappus white.

Fl. & Fr.: December-May.

About 24 km South-east of Lungleh, Gage 151 (CAL); Aizawl, 1150 m, Deb 30553.

33. LEUCOMERIS D. Don


Small, deciduous trees, with young shoots tomentose. Leaves alternate, elliptic-lanceolate, 10–18 x 2.5–5.5 cm, acuminate, base unequal, membranous, glabrous on maturity. Heads more or less sessile, densely crowded in terminal, almost round corymb. Involucral bracts multiseriate, ovate-
lanceolate, coriaceous; inner nearly flat, woolly towards base. Florets white, up to 2.5 cm long, fragrant. Achenes oblong, densely villous; pappus reddish.

Fl. & Fr.: February-November.

In dry deciduous forests. Chakang, 1600 m, Parry 122 (florC.E.C. Fischer, &c) Rare

34. MICROGLOSSA DC.


Ramblying shrubs, up to 3 m, with grooved, brown-pubescent branches. Leaves alternate, pétioled, elliptic-ovate, 2-8 x 0.8-4 cm, acuminate, quite entire or obscurely serrate, glabrous above, thinly pubescent beneath. Heads up to 0.8 cm across, clustered on the branches of corymb. Involucral bracts multi-seriate, lanceolate, unequal; outer short, with scarioso margins. Florets yellow-whitish. Achenes 4-angled, slightly compressed; pappus reddish, soft, fine, silky.

Fl. & Fr.: September-March.

Champhai, Deb 30915; North Vanlaiphai, Deb 31168; Aizawl-Sibutalung, G.K. Deka 39404.

35. MIKANIA Willd.


Glabrous or puberulous, extensive, slender twiners. Leaves long pétioled, ovate-triangulate, 3-8.5 x 1-3.5 cm, acuminate, cordate-fasciate at base, margins subentire-crenate, or angulate-dentate, sparsely pubescent.
Heads 4-flowered, 0.3-0.6 cm, in dense, terminal or upper axillary corymbs. Involucral bracts 4, lanceolate. Flowers creamy white. Achenes truncate, blackish-brown, glabrous or glandular; pappus reddish, 1-2-seriate.

Fl. & Fr.: October-March.

Common, in open places, along forest fringe. Haunaung, Deb 31359; Lawngtlai-Kawlchaw, K.P. Singh & D.K. Singh 92846.

Uses: Locally used for curing malaria, diarrhoea and for healing wounds.

36. MYRIACTIS Less.

1a. Heads up to 6 mm diam.; bracts erect
1b. Heads up to 10 mm diam.; bracts reflexed


Erect, branched, glabrous, villous or hispid herbs, 0.25-0.6 m high. Leaves alternate, ovate-lanceolate or oblong-obovate, 2.5-8 x 0.5-3.5 cm, acute, base attenuate, margins coarsely serrate, surfaces glabrous or villous. Heads globose-subglobose, up to 1 cm across, in leafy panicles. Involucral bracts 3-5-seriate, acute, reflexed at length. Flowers yellow. Achenes umbonate, compressed; pappus absent.

Fl. & Fr.: August-November.

Thalnthang, Dutta 33965.


Erect, slender, sparsely hairy herbs, up to 40 cm high; stems ribbed. Leaves alternate, elliptic lanceolate, 1.5-6.5 x 1 2.5 cm, acute, attenuate at base, margins unequally serrate, hispidulous on both the surfaces; petiole narrowly winged, up to 4 cm long; upper leaves sessile. Heads subglobose, up to 0.6 cm across, in terminal and axillary panicles. Involucral bracts 3-5-seriate, erect. Flowers elliptic-linear, yellow. Achenes flat, smooth; pappus absent.
Fl. & Fr.: June-August.

In open places, Phongpui ca 1970 m, Mao 107160.

37. PILOSELOIDES (Less.) C. Jeffrey


Acaulescent, annual herbs, up to 1 m with thick, silky villose rootstock. Leaves radical, short petioled, obovate-elliptic, or oblong-obovate, 5-13 x 2.5-5 cm, obtuse-emarginate, base narrowed, quite entire, glabrous or sparsely hairy above, white pubescent beneath. Heads solitary up to 3 cm, on long, ebracteate, villous scape. Involutural bracts 2-seriate, narrow-oblong, acute, corymbose. Florets mauve-white. Achenes narrow-elongate, 5 gonate, scaly, with a long, slender beak; pappus reddish.

Fl. & Fr.: February-June.

In humid and shady places, and along the “side of marshy valley among tall reeds and gasses”. Champhai, 1600 m, Parry 161 (fide C.E.C. Fischer, i.e.), about 70 km South-east of Lunglei, 1300 m, Wenger 442 (fide C.E.C. Fischer, i.e.); North Vanlaiphai, 1600 m, D.K. Singh 93084.

38. PRENANTHES L.

Prenanthes khasiana C.B. Clarke, Comp. Ind. 273. 1876; Rao & Mangain in Hajra et al., Fl. India 12: 315. 1995.

Tall, annual or biennial herbs, up to 1.2 m tall, with stout rootstock. Leaves variable, long petioled, deltoid, oblong or ovate-cordate, 7-10 x 2.5-5.5 cm; upper leaves more or less lanceolate. Heads cylindrical, up to 1.5 x 0.2 cm, drooping, in terminal panicles. Involutural bracts 2-3-seriate; outer ovate-lanceolate; inner linear-lanceolate. Florets bluish purple. Achenes oblanceolate, compressed, truncate or rounded at apex; pappus dull white or pale.

Fl. & Fr.: September-November.
Fig. 162: Piloselloides hirsuta (Forsk.) C. Jeffrey
In open grasslands and forest floor. Phongphui, ca 1950, Mao 107156.

39. SAUSSUREA DC.


Large herbs; stems 1-2.4 m tall, grooved, villous or tomentose, corymbose branched towards apex. Leaves petioled, alternate, 5-15 x 2.5-25 cm; lower leaves lyrate-pinnatifid, with the terminal lobe deltoid-hastate; cauline leaves ovate-lanceolate, margins serrate-sinuate toothed, punctate-scabrid or araneose above, white tomentose beneath. Heads solitary, 1.5-4 cm across, in terminal leafy panicles. Involutral bracts muli-seriate, appressed, elliptic-lanceolate, woolly-pubescent, spines and margins purple, turning black. Florets whitish-yellow. Achenes oblong, 4-5-angled, smooth, scaly or tubercled; pappus plumose, uniseriate, dirty white.

Fl. & Fr., November-May.

S. loc., Wanger 409 (fide C.E.C. Fischer, l.c.); Phongpui, B.M. Wadhwa & K.P. Singh 95844; Blue mountain, 1970 m, Mao 107134.

40. SENECELIO L.

1a. Scandent undershrubs;
   leaves ovate-hastate; pappus white

   ... 1. **S. wightianus**

1b. Erect herbs; leaves linear or elliptic-oblong;
   pappus yellowish-reddish

   ... 2. **S. wightii**


Gregarious climbers, 1.5-5 m, with pubescent young parts. Leaves ovate-hastate or sometimes lanceolate, 3-11 x 1.5-4 cm, acuminate, base acute or obtuse, margins crenate dentate, surface sparsely villous; petiole auricled. Heads more or less oblong, up to 1.2 cm, in lax, divaricate, axillary corymbs. Involutral bracts 10-12, linear oblong, acute. Florets yellow.
Fig. 163: *Saussurea deltoidea* (DC.) Sch.-Bip.
Achenes 4-angled or ribbed, outer ribs compressed, curved, hairy or glabrous; pappus white.

Fl. & Fr.: October May.

Common, in degraded forests. climbing over bushes. S. loc., 1200-1500 m, Wengen 424 (fide C.E. Fischer, l.c.); Phongpui, 2100 m, B.M. Wadhwani & K.P. Singh 96805; Muulpeng, ca 500 m, M. Sawmiliana 101737.


Glabrous or minutely villous, weak perennial herbs; stems erect, 20-60 cm high, laxly corymbose branched above. Leaves sessile, with auricled base, linear-oblong or elliptic-oblong, 8-15 x 0.5-1.2 cm, acute-acuminate, margins serrate. Heads up to 2 cm across, in lax, terminal, paniculate corymbs. Involucral bracts 12-16, oblong-lanceolate, acute. Florets yellow. Achene elongate-oblong, striated, glabrous; pappus reddish.

Fl. & Fr.: September-March.

Common in marshy places. Champhai, 1600 m, Parry 342 (fide C.E.C. Fischer, l.c.); Champhai-Zote, 1650 m, K.P. Singh & D.K. Singh 94581.

41. SIEGESBECKIA L.


Large, erect, coarse, annual herbs; stems up to 1.5 m tall, branched, glandular-pubescent. Leaves opposite, ovate-elliptic or triangular, 2.5-12 x 0.5-3.5 cm, acute-acuminate, base cuneate, decurrent, margins crenate-irregularly dentate. Heads small, peduncled, in leafy corymbose panicles. Involucral bracts 2-seriate; outer 5, spatulate, viscid-glandular; inner 6, naviculate. Florets yellow. Achenes oblong, ovoid, glabrous, not compressed, often incurved, obtuse; pappus absent.
**Fl. & Fr.:** September-April.

Common in exposed places. About 24 km South-east of Lungleh, Gage 162 (CAL); Champhai, 1600 m, K.P. Singh & D.K. Singh 94512.

42. **SONCHUS** L.


Tall, erect, milky, annual herbs, up to 2 m tall, with creeping rootstock; stems corymbose branches, glabrous. Leaves alternate, sessile, lanceolate-runcinate, 5-18 x 0.5-3 cm, acute-spinescent, base semi-amplexical, auricled-cordate, margins spinous-toothed, glabrous on both the surfaces. Heads solitary, 1 1.7 cm long, in terminal racemose or corymbose panicles. Involute bracts multi-seriate; outer small, oblong-subulate. Florets yellow. Achenes narrow, slightly compressed, ribs transversely muricate; pappus hairs white, multi-seriate.

**Fl. & Fr.:** February-June.

Common on moist and shady slopes, often on rocks under constantly dripping water. *S. loc.* Wenger 446 (flcide C.E.C. Fischer, l.c.); North Vanlaihe, 1600 m, D.K. Singh 93051; Kawnpui, 750 m, D.K. Singh 93275; Tilthlang, B.M. Wadlha & K.P. Singh 96648.

43. **SPILANTHES** Jacq.

1a. Pappus absent
   ... 1. *S. calva*

1b. Pappus present

2a. Leaves ovate-cordate; heads solitary
   ... 2. *S. oleracea*

2b. Leaves ovate-elliptic; heads paniculate
   ... 3. *S. paniculata*

Fig. 164: Spilanthes calva DC.
Erect or ascending herbs; stems sparsely pubescent, up to 45 cm high. Leaves ovate-lanceolate, 2.5-8 x 1-3 cm, acute or obtuse, margins crenate-serrate or entire; petioles up to 2 cm long. Heads subsolitary, globose, or subglobose, up to 8 x 10 cm. Involucral bracts uniseriate, sparsely pubescent. Florets yellow or whitish. Achenes more or less smooth, dark brown; pappus absent.

Fl. & Fr.: September-April.

Common in open, moist places. Kiefang, M. Sawmliana 95583; Hnathial, 750 m, Maa 107028.


Annual herbs up to 40 cm high; stems erect, branched, more or less succulent. Leaves opposite, petiolate, ovate-lanceolate or ovate-cordate, 2.5 x 0.8-3 cm, acute-obtuse, base cuneate-truncate, margins crenate-serrate or more or less entire, glabrous. Heads solitary, ovate-triangular, 0.4-1.2 cm long, axillary or terminal. Involucral bracts 2-seriate, ovate-elliptic, margins dentate. Florets mustard yellow. Achenes triquetrous, compressed, margined; pappus with 1-2 bristles.

Fl. & Fr.: February-October.

Common in moist places. Sherkor, 1250 m, Parry 585 (fide C.E.C. Fischer, l.c.); Bilkaithal-Kolasib, 550 m, D.K. Singh 93108; Phainuang, K.P. Singh 94213; Hnathial, K.P. Singh 96923.

Uses: Leaves eaten as vegetable, and also used as feed for pigs.


Small, annual herbs, up to 60 cm high, rooting at basal nodes. Leaves opposite, ovate or ovate-elliptic, 1.5-6 x 0.3-2.5 cm, acute, base narrowed,
Fig. 165: Spilanthes oleracea L.
margins crenate-serrate, glabrous. Heads up to 0.8 cm across, conico-ovate, in axillary or terminal, leafy panicles; peduncles 2-12 cm long. Involucral bracts 2-seriate, up to 12, oblong-elliptic, obtuse-truncate. Florets yellow. Achenes verrucose, glabrous, strongly margined; pappus comprising 1-2 bristles.

*Fl.* & *Fr.*: March-December.


*Uses:* Stem and leaves used as vegetable

44. SYNEDRELLA Gaertner, nom. cons.


Erect, dichotomously branched, pubescent herbs, 10-50 cm high; stems shallowly furrowed. Leaves opposite, petiolate, ovate or elliptic, 2-8 x 0.8-2.5 cm, acute, base narrowed, margins crenate-serrate, scaberulous. Heads small, 0.8-1 cm across, solitary, axillary or in angles of bifurcation, sessile or on 0.5-4.5 cm long peduncles. Involucral bracts 2-seriate; outer foliaceous. Florets yellow. Achenes 0.4-0.5 cm, dorsally compressed, 2-winged; wings lacerated; pappus comprising 2-3, stout spines.

*Fl.* & *Fr.*: June-December.

On moist, shady ridges inside deep forests, Lungchhuan- North Vanlaiphei, 1750 m, *D.K. Singh* 97175.

45. SYNOTIS (C.B. Clarke) C. Jeffrey & Y.L. Chen

1a. Heads more than 12-flowered

1b. Heads up to 12-flowered:

2a. Undershubs; leaves elliptic or elliptic-lanceolate; all flowers tubular

2b. Woody climbers; leaves elliptic or oblong-lanceolate; all flowers ligulate

... 1. *S. cappa*

... 2. *S. luschatostis*

... 3. *S. trifilifolia*

Undershubs, 1-1.8 m tall; stems suffrutiocose, white felted. Leaves short petioled, elliptic-lanceolate or ovate, 12-25 x 2.5-8 cm, acuminate, margins doubly serrate, teeth sometimes hooked, clothed with stiff hairs above, white felted beneath. Heads companiculate, up to 0.6 cm long, many-flowered, in axillary and terminal corymbose panicles. Involute bracts 8-12, linear-oblong, acute, whitish-grey, villous-tomentose. Florets yellow. Achenes oblong, obscurely 5-plated, glabrous; pappus white.

Fl. & Fr.: December-April.

In degraded forests. S. loc., 1300 m, Wenger 421 (fide C.E.C. Fischer, l.c.).


Undershubs; branches thin, striated, clothed with short hairs. Leaves petioled, elliptic-lanceolate or elliptic, 6-10 x 2-3 cm, acute-acuminate, margins serrated, with reddish stiff hairs along nerves. Heads 7-10-flowered, up to 0.8 cm across, in axillary, corymbose panicles, peduncles capitate. Involute bracts 8, linear-lanceolate, subacute-obtuse. Florets bright yellow. Achenes cylindrical, 5-ribbed, glabrous; pappus white, rostrate.

Fl. & Fr.: January-February.

Phongpu, 2300 m, Parry 574 (fide C.E.C. Fischer, l.c.). Endemic.


Glabrous, woody climbers; stems and branches long, slender, distally angulated. Leaves petioled, ovate-lanceolate or elliptic, 6-18 x 2-5.5 cm, acute-acuminate, base cuneate-acuminate, margins serrate, membranous. Heads up to 0.6 cm long, few-flowered, in axillary and terminal highly branched rounded corymb. Involuteral bracts 5-8, linear-oblong, obuse or acute, glabrous. Florets yellow. Achenes glabrous; pappus white or slightly dingy.

*Fl. & Fr.*: January-April.

Phongpui. 2000 m, Parry 84 (*sine* C.E.C. Fischer, l.c.); Sialsuk-Aizawl, Deb 30843.

46. **TITHONIA** Desf. ex A. Juss.


Herbs or large undershrubs, 1.5-2.5 m tall. Leaves broadly ovate-rotundate, 7-25 x 4-20 cm, acuminate, base narrowed-cuneate, margins crenate or lobed, pubescent on veins. Heads radiate, solitary, 5-8 cm across, terminal. Involuteral bracts 2-seriate, ovate-oblong, acute or acuminate. Ray florets bright yellow. Disc florets dull yellow. Achenes compressed, tomentose; pappus fimbriate.

*Fl. & Fr.*: September-February.

Common along roadsides. Saiper, Dutta 33488; Siphir, K.P. Singh 97132.

47. **VERNONIA** Schreber.

1a. Plants herbaceous:

2a. Leaves sessile; heads large, up to 2.5 cm diam.; 30-50-flowered

... *V. squarrosa*
Fig. 166: Tithonia rotundifolia (Miller) S.F. Blake
FLORA OF MIZORAM

2b. Leaves petiolar, heads smaller, up to 1.2 cm diam., up to 20-flowered only

3a. Plants pubescent; leaves lanceolate or spatulate; heads 18-20-flowered; achenes terete; pappus white or dull white ... 2. V. cineracea

3b. Plants puberulous or scabrid; leaves elliptic or obovate; heads 6-12-flowered; achenes glandular; pappus white or red ... 6. V. saligna

1b. Plants undershrubs, shrubs or trees:

4a. Climbers ... 10. V. vagans

4b. Erect shrubs or small trees:

5a. Plants completely glabrous ... 1. V. blandu

5b. Plants tomentose-pubescent:

6a. Small trees ... 11. V. volkameriifolia

6b. Undershrubs or shrubs:

7a. Stem stout, pubescent-tomentose, corymbose branched above:

8a. Leaves petiolar, scabrid above, villous subtomentose below; heads 3-8-flowered; involucral bracts few-seriate, small; flowers pale-blue; achenes glandular-pilose ... 3. V. divergens

8b. Leaves subsessile, glabrous above, pubescent along nerve beneath; heads 30-50-flowered; involucral bracts multi-seriate, foliaceous; flowers purple; achenes densely, silky ... 9. V. subsessilis

7b. Stems slender, simple or sparingly branched from below:

9a. Stem grooved; leaves elliptic-falcate; pappus hairs barbellate ... 5. V. parryae

9b. Stems terete; leaves oblong or elliptic-lanceolate; pappus hairs simple:

10a. Leaves puberulous on both the surfaces; heads 8-10-flowered; achenes pilose-pubescent; pappus red ... 4. V. extensa

10b. Leaves scabrid above, villous-pubescent beneath; heads 35-flowered; achenes glabrous or glandular; pappus white or dull white ... 7. V. allhetensis

Rambling, scandent shrubs, with glabrous, slender branches. Leaves petioled, alternate, elliptic or ovate-lanceolate, 4.5-12 x 1-4.5 cm, acuminate, margins entire, acuminate-acute at base, surface glabrous. Heads up to 25-flowered, oblong, 0.5-1 cm, in terminal, elongated, branched panicles. Involucral bracts multi-seriate, imbricate, linear-oblong, acute, puberulous outside. Florets purple or dull yellow. Achenes pubescent, 10-ribbed; pappus red.

*Fl. & Fr.*: December-March.

Darzo, 1600 m, *Parry* 385 (*fide* C.E.C. Fischer, *l.c.); Jungle Valley forest, Lungleih, 1000 m; *Gage* 13 (CAL); *Thee riot*, *Deb* 31287.


Erect, perennial, pubescent herbs, 0.15-1 m high; stems slender, grooved. Leaves petioled, alternate, elliptic-lanceolate or spatulate, 2-7 x 0.5-1.2 cm, acute or obtuse, margins subdentate, membranous or somewhat coriaceous. Heads 18-20-flowered, up to 8 cm across, in loose, terminal corymbs. Involucral bracts 4-seriate, linear-lanceolate, acuminate, with bristly spines. Florets pink purple. Achenes terete; pappus white or dull-white.

*Fl. & Fr.*: February-December.

Common along roadsides. *s. loc.*, 800-1300 m, *Wenger* 417 (CAL); *s. loc.*, *Lorrain* s. num. (*fide* C.E.C. Fischer, *l.c.); Lushai Hills, *Dutta* 34010 (CAL), 33877.

Fig. 167: Veronia blanda DC.
Stout, pubescent-tomentose or scabrid shrubs or undershrubs; stems erect, 1-1.5 m tall, corymbose branched above. Leaves petioled, highly variable, ovate, elliptic-lanceolate or rhomboid, 3.5-13 x 2-10 cm, acute. Cuneate at base, margins serrate, scabrid above, villous, pubescent or subtomentose below. Heads 3-8-flowered, up to 0.6 cm across, in dense, much branched, corymbose panicles. Involucral bracts few-seriate, small, obovate-ovate, slightly pubescent, tips greenish. Florets pale blue. Achenes 10-ribbed, glandular-pilosorous or glabrous; pappus red or brownish, with scabrid hairs.

_Fl. & Fr._: November-February.

Lushai Hills, _Parry, s. num._ (CAL).


_Erect, pubescent shrubs or undershrubs; stems 1.5-2.5 m tall, sparingly branched from below. Leaves short petioled, obovate-lanceolate, 12-25 x 5-7.5 cm, acuminate, attenuate at base, margins serrate, puberulous on both the surface. Heads larger, obovate, up to 1.5 cm, 8-10-flowered, in terminal, loosely corymbose panicles. Involucral bracts few, linear-oblong, obtuse, glabrous. Florets bright mauve. Achenes 10-ribbed, pilose-pubescent; pappus reddish, with outer setae smaller._

_Fl. & Fr._: December-March.

In degraded forests, Phongpui, 2000 m, _Parry 556_ (s. _C.E.C. Fischer, l.c._); Lushai Hills, _Parry S. num._ (CAL); _s. loc., 1000-1300 m Wenger 416 (s. _C.E.C. Fischer, l.c._).


_Undershrubs, with thin, sulcate, fulvous pubescent branches. Leaves short petioled, linear-elliptic, or sometimes falcate, 8-20 x 1.5-3 cm, acuminate, narrowed at base, margins minutely dentate. Heads 20-flowered, up to 12 cm across, in axillary corymb. Involucral bracts_
numerous, with scarious margins. Florets mauve-purple. Achenes thin, ribbed, with white hairs; pappus white, barbellate.

*Fl. & Fr.*: January.

Vombuk, 1600 m, Parry 502 [fide C.E.C. Fischer, l.c.]. Endemic, rare.


Coarse, variable, suffrutescent herbs; stems 0.5-2.5 m tall, striate, puberulous or pubescent, corymbose branched above. Leaves short petioled, elliptic-oblong or obovate, 7-15 x 1.2-6.5 cm, acute-acuminate, acute or cuneate at base, margins coarsely serrate, more or less glabrous above, puberulous or pubescent, glandular-punctate beneath. Heads 6-12-flowered, 0.5-1.2 cm across, in terminal, rounded corymbs. Involucral bracts purple, few-seriate, oblong, acute-acuminate, with scarious margins. Florets mauve-purple. Achenes 10-nerved, glandular in between the ribs; pappus white or red, outer slightly setose, deciduous.

*Fl. & Fr.*: December-March.

S loc, 900-1200 m. Wengar 304 [fide C.E.C. Fischer, l.c.]; Sialsuk-Aizawl, Deb 30828; Kolasib, 750 m, D.K. Singh 93173.


Small, rigid, sparingly branched undershrubs, 0.3-1.2 m high; branches terete or laxly striate, scaberulous. Leaves alternate, shortly petioled, elliptic-lanceolate or obovate, 3-7.5 x 1.5-2.5 cm, acute, base attenuate, margins remotely serrate, scabrid above, villous or pubescent beneath. Heads up to 35 flowered, solitary or few in terminal corymbs, 1.5-2 cm across. Involucral bracts multi-seriate, oblong-elliptic, aristate-acute. Florets deep purple. Achenes glandular between the ribs; pappus white or dull white.

*Fl. & Fr.*: May-October.
Fig. 168: Vernonia silhetensis (DC.) Kerr.

Rigid, scabrid herbs; stems 30-60 cm high, erect, simple, terete. Leaves sessile, obovate-elliptic, or oblong-lanceolate, 5-12.5 x 2.5-5 cm, acute, rounded or acute at base, margins denticulate, scabrid on both the surfaces, pubescent along the nerves beneath. Heads large, 30-50-flowered, up to 2.5 cm across, solitary and axillary, sometimes 2-3 grouped in terminal panicles. Involucral bracts multi-seriate; outer smaller, oblong, subulate-lanceolate, squarrose, sparsely pubescent. Florets purple. Achenes 10-ribbed, silky; pappus yellowish red, with short, deciduous outer hairs.

*Fl. & Fr.*: October-December.

Champhai, 1300 m, *Parry 349* (*fide* C.E.C. Fischer, l.c.).


Stout, pubescent-tomentose shrubs or undershrubs; stems 1-1.5 m, corymbose branched above, leaves subsessile, obovate-lanceolate or lanceolate, 10-30 x 2.5-10 cm, acute or acuminate, cuneate or acute at base, margins serrate-dentate, glabrous above, pubescent along the nerves beneath. Heads 30-50-flowered, up to 1.8 cm across, in terminal, leafy corymbs. Involucral bracts multi-seriate, foliaceous; outer linear-subulate; inner narrow, erect, acute, acicular at apex. Florets purple. Achenes obscurely 10-ribbed, dense silky; pappus reddish, outer numerous, subpaliaceous, persistent.

*Fl. & Fr.*: November March.

Zongling, 1300 m, *Parry 493* (*fide* C.E.C. Fischer, l.c.).

Rambling, woody climbers, with terete-straight, angulate, sparsely pubescent branches. Leaves petioled, elliptic-lanceolate, ovate 5-10 x 2.5-6 cm, acute, cuneate or acute at base, margins quite entire, glabrous or sparsely puberulous on both sides. Heads 5-10-flowered, 0.8-1.5 cm across, in terminal, leafy panicles. Involucral bracts few-seriate, linear-lanceolate or ovate, acute, obtuse, glabrous outside, with scarious margins. Florets white. Achenes 10-ribbed, compressed, glandular-pilose or glabrous; pappus red, outer hairs few, paleaceous, deciduous.

*Fl. & Fr.*: December-March.

*S. loc.*, Parry, s. num. (CAL).


Small trees or shrubs, up to 6 m tall, with brown pubescent shoot and leaves. Leaves petioled, obovate, obovate-oblong, or oblanceolate, 10-25 x 2-10 cm, acute or acuminate, base narrowed, margins more or less entire or sinuate-dentate, glabrous or glabrescent above, tomentose-hairy beneath. Heads numerous, 3-10-flowered, 1-1.5 cm, in terminal, cymose panicles. Involucral bracts few-seriate; inner oblong-ovate, obtuse or acute, glabrous or puberulous. Florets pink to purplish. Achenes 10-ribbed, pilose-glandular; pappus filiform, white, persistent.

*Fl. & Fr.*: December-May.

North Lushai Hills, *Godfrey* 464 (CAL); Sialsuk, *Deb* 30741; Aizawl-Champhai, *Deb* 30916; Phongpui, 2100 m, *B.M. Wadhwa & K.P. Singh* 96801.
48. WEDELIA N.J. Jacquem


Slender, scabrid or pubescent, procumbent or scandent, obnoxious herbs; stems (15-) 30-80 cm high, dichotomously branched. Leaves opposite, petiolate, ovate-lanceolate, 4-18 x 0.5-7.5 cm, acute, base narrowly cuneate, margins serrate, surface pubescent. Heads solitary, up to 1.2 cm across, in terminal corymbs. Involucral bracts 2-seriate; outer ovate, subacute, inner subulate, acute. Florets yellow. Achenes obovoid, compressed or more or less 3-angular, with slightly contracted apices; pappus scaly or in toothed ciliate ring.

*Fl. & Fr.:* April-December.

Lawngtlai, *Dutta* 33737; Bualpui, *Dutta* 33585; Thalthlang, *Dutta* 34003.

49. XANTHIUM L.


Coarse, annual herbs or undershrubs; stems hispid-strigose, slightly angulated. Leaves alternate, petiolate, broadly ovate-triangulate, or cordate-orbicular, 3.5-16 x 4.5-16, acute, margins lobed and dentate, base cuneate, scabrid or hispid. Heads solitary or clustered in terminal and axillary racemes. Fruiting involucres ovoid-oblong, covered with hooked spines. Bracts 1-2-seriate, narrow. Achenes enclosed within the hardened cells of utricle; pappus absent.

*Fl. & Fr.:* September-May.

50. YOUNGIA Cass.


Glabrous or puberulous annual herbs, 15-75 cm high; stems hollow, simple or branched. Leaves rosulate; radical leaves obovate, 5-15 cm long, margins lyrate-runcinate, sinuate or pinnatifid, membranous, glabrous or pubescent-pilose. Flowering shoots 1-numerous from roots, 15-45 cm, corymbosely branched. Heads 0.4-0.6 cm across. Involucral bracts 2-seriate; inner 8, narrow-oblong, more or less uniseriate; outer few, small. Florets dull white-yellow. Achenes oblong, striated, reddish brown, ribs smooth; pappus white, small.

Fl. & Fr.: Throughout the year.

On shady slopes or moist sandy soils. Durac, Dutta 34070; Phongpui, B.M. Wadhwa & K.P. Singh 96813.

CULTIVATED TAXA

Hellianthus annuus L., Sp. Pl. 904. 1753.

A native of North America; extensively cultivated as an ornamental as well as for healthy edible oil.


A native of Mexico, widely cultivated for ornamental flowers.
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