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Curator,
Indian Botanic Garden Calcutta.

BENGAL PLANTS

A LIST OF THE PHANEROGAMS, FERNS
AND FERN-ALLIES INDIGENOUS TO, OR
COMMONLY CULTIVATED IN, THE
LOWER PROVINCES AND CHITTAGONG

WITH DEFINITIONS OF THE
NATURAL ORDERS AND
GENERA, AND KEYS TO
THE GENERA AND SPECIES



BY

DAVID PEAIN

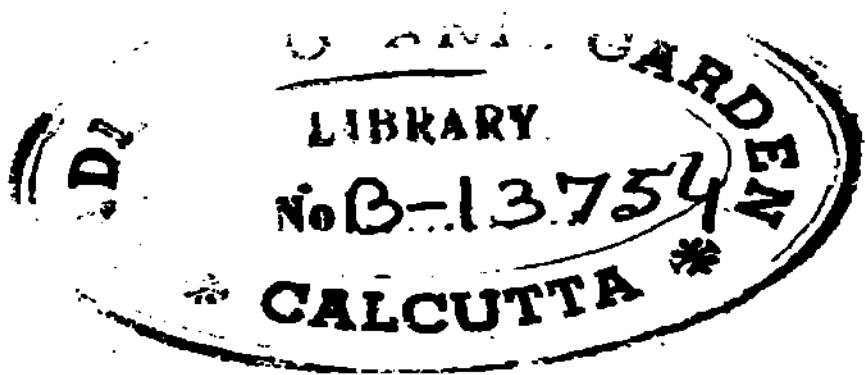
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Calcutta

1903

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TO

H. H. RISLEY, ESQ., C.I.E.,

Officier cVAcadèmic

MY DEAR HISLKY,

Wherever my search for the plants of Bengal has led me, I have found myself following your footsteps in the study of ^tthe folks that dwell in the Lower Provinces and live in the pages of the *Tribes and Castes of Bengal*.

Will you, then, accept this work as a mark of my appreciation of yours, and a token of my warm regard ?

Yours very sincerely,

D. PBAIN.

PREFACE.

TEN years have passed since the suggestion that the writer should prepare a guide to the plants of the provinces under his rule was first made by Sir CHARLES ELLIOTT. The work could not, however, be undertaken till the *Flora British India* was finished; since then it has occupied the scanty leisure of the writer, who has received much encouragement from Sir JOSEPH HOOKER, Sir GEORGE KING, and Sir JOHN WOODBURN to carry it to completion.

Its many imperfections—due in some measure to the fact that *dies fasti ac feriati* have alone been available for its preparation, and that on these it could only receive hurried attention—must have been more numerous had not Sir GEORGE KING, with a kindness which nothing can repay, read and corrected the final proofs.

The key to the species of *Polygnum* was drawn up by the writer's friend, Captain A. T. GAGE. The need for an appendix is mainly the result of a practical interest in the progress of this work on the part of Mr. J. H. LACEY and Mr. H. H. HAINES, who have communicated records of species unknown to the Lower Provinces when its preparation began. The writer is also much indebted to Messrs. Messrs. Newman & Co., of London, for the care they have exercised, at so great a distance, in printing its pages.

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CONTENTS.

	PAGE
INTRODUCTION	1
ARTIFICIAL GUIDE TO THE GENERA	21
CLASSIFICATION OF THE NATURAL SYSTEM	165
ANGAL PLANTS:—	
A. PHANEROGAMIA:—	
I.—TRICOLPORITEAE	191
II.—CALYCIFLOREAE	357
III.—POLYMEROPHYTES:	547
IV.—INCOMPLETE	861
V.—MOLUCCELLACEAE	1000
VI.—MONOCOTYLEDONES	994
B. CRYPTOGAMIA:—	
VII.—FILICES	1287
VIII.—RHIZOCARPEAE	1264
IX.—EQUISETINITE	1267
X.—LYCOPODINEAE	1268
APPENDIX	1271
INDEX	1279

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I. INTRODUCTION.

completion of the *Flora of British India*, which for over a century (1872-97) absorbed much of the attention of Joseph Hooker, who has written the greater portion and the whole of that masterly work, marks the end of a new era in the history of Indian Botany. In his preface to the first and last volume of the *Flora*, Sir Joseph describes it as a great work which, besides enabling botanists to name with accuracy a host of Indian plants, may, I hope, serve two purposes: to facilitate the compilation of local Indian floras and monographs of large Indian genera; and to enable the botanographer to discuss the problems of the distribution of plants from the point of view of what is perhaps the richest and mainly the most varied botanical area on the surface of the globe."

(period having ended, a new one must begin. The efforts of Indian botanists have for the past thirty years been largely directed to the accumulation of material calculated to facilitate the preparation of the *Flora of British India*; they must now be turned to the compilation of smaller works, compact in form and use in style, dealing with the vegetation of specific areas throughout the Indian Empire which is served by the *Flora*. This, in the botanical sense, includes, besides those territories under the control of the Government of India, the Island of Ceylon, the Malayan Peninsula, and the Himalayan regions of Nepal and Bhutan.

The first formidable difficulty, however, confronts those who have to decide what the limits of the specific areas to be dealt with in local Floras shall be. Putting aside for the moment the Malayan and the Indo-Chinese possessions of Britain, and regarding the huge belt of hill-country which extends along the range from the Hindu Kush to the Mishni and the Kachin

ranges, we find within what is more precisely known as India a number of obvious and intelligible natural subdivisions. There is India Deserta—the dry and almost rainless area in Scinde, Rajputana, and the Panjab; there is India Diluvia, with its chief development in the Gangetic plain, comprising much of the territory that constitutes the North-West and the Lower Provinces; there is India Aquosa, the wet forest tract along the western Ghats from Guzerat to Travancore, which receives all the force of the south-west monsoon; there is India Vera, the dry but not desert triangle between the western and the eastern Ghats, with its apex in Tinivelly and its base along the Ganged plain; there is India Subaquosa, the eastern Ghats and the strip between these and the sea; finally, there is India Littorea, most highly developed in the Sundribun area of the Gangetic delta. In each of these areas the type of vegetation that prevails is more or less dependent on the natural conditions there met with; this type is in consequence more or less distinctive. The obvious treatment is therefore to subdivide India into the regions thus roughly outlined, and to provide a compact local Flora for each. But it is evident enough, when further consideration is given to this subject, that, though plausible in theory, such a system of delineation is neither wholly practicable nor altogether expedient. In fact, as India Deserta and India Aquosa are concerned, the terms are compact and the boundaries definite; it is, however, otherwise with India Diluvia and India Littorea. The vegetation characteristic of the Gangetic plain extends into the valley of the Brahmaputra, and though we may for the moment ignore, because this territory affected is Indo-Chinese, the fact that this flora occurs in the valley of the Irrawaddy, we cannot forget that the same or a very similar vegetation appears in the alluvial tracts along Indian rivers other than the Ganges. Again, the mangrove forests at the mouths of the Ganges constitute no more than an outlying patch of a flora that characterises every sea-shore from the Mascarenes to Melanesia; this mangrove vegetation, though more extensively represented in the Sundribuns than elsewhere in India, is not more distinctive of the Gangetic delta than it is of similar tracts at the mouths of other considerable Indian rivers. Finally, the line of demarcation between India Subaquosa—the Acts along and below the eastern Ghats, and India Vera—the great insular

table-land, is so much less clearly defined than the corresponding line between this table-land and the country along and below the western Ghats, that the two have to be dealt with as an organic whole. When so treated the two together form an area that, in its extent, is out of all proportion to any of the other subdivisions indicated.

If what has been said indicates that the adoption of natural areas is hardly practicable, it is easier still to show that this system of subdivision lacks convenience. Political exigencies and the accidents of history have led to an administrative partition of the empire and an ethnic distribution of its peoples by no means coincident with the natural characteristics of its provinces, as these are reflected in the vegetation. The theoretical advantage of dealing with even a compact natural area is thus usually overridden by a consideration for those whom a treatise like a local *Flora* is intended to benefit. The dweller in the Madras Presidency who would wish to study the Madras vegetation, must, if these natural areas be adopted, have at hand two works: one dealing with India Aquosa or, as an eminent Indian botanist has proposed to name it, Malabaria; and a second dealing with the conjoint, India Subaquosa and India Vera, for which area the same authority has proposed the name Coromandelia. The inhabitant of the Bombay Presidency must possess both these works, and in addition that which treats of India Deserta. The district officer in the North-West Provinces, besides providing himself with a work dealing with the vegetation of the Gangetic plain, should have also at hand at least that which refers to Coromandelia. Finally, in the Lower Provinces, with which we are now more immediately concerned, anyone stationed in Chota Nagpur must use the volume on the plants of Coromandelia; anyone in Tirhut or Behar, that dealing with the Gangetic plain: anyone in Bengal itself, the last mentioned work, supplemented by one dealing with the Littoral vegetation of the Sundribuns; while anyone posted to Chittagong must consult a treatise dealing with the vegetation of Indo-China, whereof Chittagong forms geographically, though not politically, an integral part. If the public interest is to be consulted, it is clear that a system of delimitation other than the obviously natural one is essential in deciding what are to be the limits of the areas treated in our Indian local floras; and the best

system to adopt, because the most practicable, must be one that is based on a frank recognition of existing political frontiers, no matter how unscientific these may be. Now and again, however, it may be found possible, and indeed advisable, to effect a compromise, at least in matters of detail, between these political frontiers and the boundary lines indicated by the natural facts of distribution.

In the case of the Lower Provinces—for the use of whose inhabitants the present work is designed—a compromise of this kind seems particularly desirable. Here are included the plants of Bengal, Behar, and Tirhut, or those of the eastern half of the Gangetic plain, and those of the Sundribuns or the Gangetic delta. Besides these, however, the work includes not only the plants of Chota Nagpur and of Orissa, which are almost wholly characteristic of Coromandelia, but those of Tippera and Chittagong, which are Indo-Chinese rather than Indian. With the exception of a single district the work deals with the whole of the territories that go to form the Lieutenant-Governorship of Bengal, irrespective of the natural areas completely or partially included in its various provinces. The excluded district is that of Darjeeling,* which, save as regards the submontane subdivision of Siliguri, is wholly Himalayan, and, from an elevation of 1500 feet upwards, possesses a flora that differs more essentially from the flora of every other district in the Lower Provinces than, among themselves, *do* those of any other two districts. To include in our Bengal list the plants of the Darjeeling district that are distinctly Himalayan would necessitate a larger volume, while the increase in bulk would confer no corresponding benefit on, indeed it might conceivably prove a hindrance to, some of those who are likely to use it. It seems preferable, therefore, to prepare a separate list of the plants of the Darjeeling district. If it be objected that the course now followed involves the exclusion from the Bengal list of the plants of the Sikkim Terai, which naturally forms part of the northern extension of the Bengal plain, the answer is that the corresponding tract to the east of the Iliver Tista, known as the Duars, is within the area here discussed, so that no species found in any part of Bengal is likely to be omitted from the list. If it be further objected that the inclusion of the plants of the Terai and of the lower hills and valleys of Sikkim in a subsequent Darjeeling

list will involve, *ipso facto*, the repetition of a considerable number of species already dealt with in the Bengal list, the answer is that this will ensure that no species shall drop out of both lists, a contingency that might easily occur in the case of any species found only on or near the arbitrary boundary line which must otherwise be drawn between the one area and the other.

When the question of boundary delimitation has been satisfactorily settled, the compiler of a local Flora finds himself face to face with a new and almost equally formidable difficulty. The collections on which the *Flora of British India* is based have been sufficiently extensive to permit of a general review of the vegetation of the Indian Empire, and are ample enough to allow of a special study of the characteristic features presented by the various natural subordinate areas. It is, however, found, when a definite tract is examined in detail, that we possess, as a rule, too limited a knowledge of its vegetation to admit of the compilation of a complete and reliable account of its flora. In the case of the Lower Provinces, while it may be assumed that our knowledge of the plants of the Gangetic Plain, and perhaps also of the Sundribuns, is fairly complete, and may even be taken for granted that, though we do not know all, we know the majority of the species of Behar, Chota Nagpur, and Chittagong, it is certain that our knowledge of the flora of Northern Tirhut and of that portion of North Bengal which constitutes the Duars leaves much to be desired, and that of the vegetation of the hilly portions of Tippera and Orissa we know no more than is necessary* to enable us to appreciate our ignorance. The time for the preparation of a complete Local Flora of the Lower Provinces has not yet come; much special work is still called for in many of the more outlying districts. Yet something must be done, if the attention and interest of those capable of rendering the necessary assistance is to be invoked. What under the circumstances seems the best measure to adopt is to issue a provisional list or census of the plants within our area. This list is based on specimens or drawings preserved in the Calcutta Herbarium, supplemented in a few instances by a reference to species from Bengal, present in the collections at Kew but not represented at Calcutta. Under each species reference is made to the provinces from which it has hitherto been reported. But since the provision of such a list goes a very short way towards assisting those inter-

eastern half. In the western half the northern portion is occupied by the eastern extension of the Upper Gangetic plain, constituting to the north of the Ganges the province of Tirhut, to the south of that river the province of Behar. Immediately to the south of Behar rises the Chota Nagpur plateau, which forms the north-eastern portion of the table-land of Central India; south and south-east of Chota Nagpur lie the highlands of Orissa and the level country between these and the sea. The greater portion of the eastern half, from the eighty-seventh to the ninety-second meridian, is occupied by Bengal proper and the Sundribuns, or the Lower Gangetic Plain and the Gangetic Delta; between the ninety-second and ninety-third meridians, to the south of the twenty-sixth parallel and east of the Gangetic Delta, lie the hilly tracts of Tippera and Chittagong, which, though politically included in our area, belong geographically to Indo-China rather than to India.

The essential features of the area therefore are those of a great alluvial plain, with the lower spurs of the Himalayas and a strip of submontane forest along its northern border. The longer axis of the first or western half of this plain runs, like the river that dominates it, from west to east; that of its second or eastern half runs at right angles to its former course, from north to south. To the south of its upper or western half, and to the west of its lower or eastern half, this alluvial plain is again bounded by a fringe of submontane forest, above which rise the escarpments of the plateau of Chota Nagpur. The lower or eastern half of this alluvial plain extends towards the north-east into the valleys of the Surma and the Brahmaputra, and is bounded along the south-east border by the submontane forests, and the hilly tracts beyond them of Tippera and Chittagong. The submontane forests to the north and to the south-west of this plain are characterized by the existence of gregarious tracts of *Sal*, unknown in the forests to the south-east; these latter forests are distinguished by the presence of *Gurjan*, unknown in the Subhimalayan forests, or in the submontane forests of Chota Nagpur.

The essential features of the vegetation in the area to the north of the Ganges, from the Gandak on the west to the Brahmaputra on the east, as we pass from north to south are as follows. First, a narrow, more or less sloping, gravelly ^{tan} _{7 T ' *T*} the base of the Himalaya, ⁷ ₇ , w ^ rta, except along river-beds, with a

dense forest, the constituent species of which are * " » * £ £ ? £ on the lower slopes of the mountains themselves. * e a ^ J river-beds only a few tough flexible bushes occur; along f a shingly river-courses the jungle is open and P « TM £ " ? the species are those characteristic of a drier climate than obtain in the ally succeeded red with long the ground as a rule

is in waste tracts usually covered with open J ^ - ° f %bus T character in the western parts, taller and more paik-like in t he central districts, and mixed with reedy grass or some times ^ eon is sisting only of tall grass as we pass to the east Much of n and is tract, however, especially in the west, is under « r ° W s of then bare or diversified with bamboos, palms, » ° d ° TM t h ° mangoes, or, less often, groves of other trees; in and ° * t h e villages themselves the mangoes are often « « " " * n i e d b y a number of tree-weeds and semi-spontaneous more o less useful bushes and trees, that form characteristic village' * n i b b e r i e s . In the western parts of this area, where the population i very dense, these village shrubberies are sparingly ^ « t e d ; further east, the thickets thus formed become as a rule * * " and denser; in places where a population has ^ ^ ^ X S ^ L appeared, the species characteristic rf th » M v ^ form dense and sometimes, as on the site of u o m , r a i h e r e x t e n s i ^

Towards the west, the tracts liable to inundation are mainly confined to the banks of the larger rivers, and are there often covered with a jungle of reeds and bushes, N * ' T * ! ; ,. few trees. As we pass further east, however, the TM TM ° « 8 ° widen considerably in proportion to their streams, and . t o * b e * s contain little or no vegetation. The powerftU current « t h e r a m s sweeps everything away; * e shingly or sandy b a n d a r - t o t h e r seasons too dry to admit of much growth. But old nve r - b e d s , marshes, lakes, and such streams as are stagnant » r « J ... except after heavy rains, are almost as ^ ^ ^ ^ vegetation as is the land, while even small rivers witu S f stream abound with water-plants. The south-eastern portion of North Bengal and that portion of Central Bengal to the east of

the Bhagirati and the Hughli is of this character; while the same features are continued into Eastern Bengal, where they become exaggerated in the Jhils, a tract wholly under water during the rains, and only partially dry in the cold season. The marshes that in the cold weather stretch away from the river-banks, which stand a few feet above the mean level of the flooded country, are covered with rice. In the rains they form an almost unbroken inland sea of fresh water, dotted with islets of matted floating grasses. The banks themselves carry a fringing fence of brush-wood. As we pass southward from Central Bengal these features become equally exaggerated, but in a different manner, in the area of the Sundribuns within which the influence of the tides is felt. Here the whole is covered with a dense forest of those trees peculiar to mangrove swamps, and in its western half finally ends at the sea-face in a fence of the shrubs and climbers characteristic of all Indo-Malayan coasts. The eastern half of the Sundribun coast-line, where the tides are stronger and the distributaries of the conjoined Ganges and Brahmaputra discharge a greater volume of fresh water, consists of muddy river-banks and a muddy sea-face without vegetation. The north-eastern portion of this deltaic plain, before it passes into the salt-water marshes of the Sundribuns or the fresh-water marshes of the Jhils, is characterized by the presence of many low hills, islets of lateite rising slightly above the plain of alluvial soil, usually densely forest-clad; the trees at their bases mixed with tall grass, higher up their slopes tangled with heavy creepers.

Immediately to the south of the Ganges, from the Son eastward to the Bhagirati, the features met with north of the river continue unchanged, though the country as a whole is drier, the cultivation is less extensive, the bush-jungle more plentiful and closer, the groves of palms near villages larger. As we pass further south the country becomes diversified with numerous bare, low hills, and the intervening jungle becomes more park-like. The level or nearly level plain is much narrower than the corresponding tract to the north of the Ganges, and rapidly passes into a submontane forest altogether similar in character to, and largely identical in composition with, the corresponding tract at the foot of the Hiraalayas. This forest extends up the slopes that lead to the edge of the table-land of Chota Nagpur. Immediately to the west of the Bhagirati

and the Hughli, in Western Bengal, we find, especially towards the south, an extension of the features that characterize Central Bengal. The strip of alluvial semi-aquatic rice-land is, however, comparatively narrow, and along the drier parts of West Bengal, from Burdwan to Midnapur up to the eastern edge of the Chota Nagpur plateau, we find repeated the features encountered between the Ganges and the northern slopes of that table-land. These characters are all continued southward into Orissa, where the lowlands are only an extension of Western Bengal, and the highlands are continuous with those of Chota Nagpur. Between the sea and the alluvial portion of Orissa, which is rather extensive, especially in the valley of the Mahanadi, we do not, however, experience that transition to a mangrove-swamp which characterizes Central Bengal, but meet instead, both to the north and again to the south of the Mahanadi delta, with a series of sand-dunes interposed between the rice-plain and the sea-face.

The inner highlands of Orissa are forest-clad like the ghats that lead up to their eastern edge; further west they become bare, or are only sparsely forest-clad. The same is true of the eastern edge of the Chota Nagpur plateau; the northern edge of that plateau and the table-land itself where not under cultivation are sparsely clad with a forest that, like the forests of Orissa, in appearance and largely in composition resembles those of Central India, rather than the forest met with in Northern Bengal. Some of the loftier peaks, both in Chota Nagpur and in Orissa, are sufficiently high to be more humid near the top than they are lower down, and therefore possess a few species characteristic of a nearly temperate moist climate.

The forest on the isolated hills already alluded to as characteristic of the northern portion of the alluvial area to the east of the Brahmaputra and the Megna, where they constitute the Madhopur jungles of Western Mymensingh, has altogether the appearance of, and in composition is largely identical with, the submontane forests of the Subhimalayan area and of the Chota Nagpur ghats, with, however, a decidedly larger proportion of such species as are to be found in Chota Nagpur, without occurring under the Himalayas, than it has of such species as are met with under the Himalayas, but not in Chota Nagpur. There are, however, present in these low hills an appreciable number of species

that are not found in either of these areas, but that occur in the Garo Hills in Assam or in Tippera, which bounds the deltaic plain on the east, and in Chittagong, which continues, but on a more extensive scale, the features that characterize Tippera.

The provinces of Tippera and Chittagong are hilly throughout. The northern part of Tippera, where the hills are low, is largely covered with bamboo jungle. The southern portion is, like the higher part of Chittagong, covered with dense, often rather dry forest. The lower part of the Chittagong hills is often covered with brushwood. Between the outer hills themselves lie cultivated river-valleys, while between these hills and the sea is a narrow level strip of rice-land with, towards the north, a muddy sea-face, as in the adjacent eastern portion of the Sundribuns. More to the south a series of low flat islands skirt the coast, while the shores have the same mangrove vegetation and sea-fence as the western Sundribuns.

For the purposes of this work, the natural boundaries of the four western provinces, Tirhut, Behar, Chota Nagpur, and Orissa, have been left unchanged. As regards the first three, this treatment is as natural as it is convenient. Tirhut, lying from west to east between the Gandak and the Kosi, from north to south between the Subhimalayan forest and the Ganges; and Behar extending from the Son on the west to the old bed of the Bhagirati on the east, and lying from north to south between the Ganges and the ghats of Chota Nagpur, together form an integral portion of the Upper Gangetic plain. Chota Nagpur, immediately to the south of Behar, similarly constitutes a direct north-easterly extension of the highlands of Central India.

From one point of view it might have been advisable to deal with Tirhut and Behar together. It is, however, more convenient to separate them because Tirhut is wholly flat, whereas Behar is much diversified by hills, outliers from the flanks of the Chota Nagpur plateau. Behar, too, is appreciably drier than Tirhut, and these two circumstances, greater diversity of surface humidity, account for the presence in Behar of many species from the Bandelkand, and some even from the Panjab, that are absent from Tirhut. Another and, though an accidental, not less factor in influencing the vegetation of Tirhut is the population. So close, in consequence, is the tilled whole districts field is conterminous with field and the cultivated

land abuts so closely on wayside and watercourse as to leave no foothold for those species that form the roadside hedges and fill the weedy waste places *si* characteristic of Lower Bengal. Even the village shrubberies that constitute so marked a feature of much of our area, are in Tirhut conspicuous by their absence. The result is that, except for the water-plants in the smaller streams and sluggish rivers, the vegetation of Tirhut is chiefly limited to the crops with their concomitant field-weeds; even the latter are often conspicuous by their paucity. To this state of affairs is largely due the fact that our collections from South Tirhut are few and scanty. Of North Tirhut, where our province abuts on the submontane forest, here mostly within the Nepalese frontier, we know very little, the only collections of importance from the region being those of Buchanan-Hamilton, few of whose specimens are in India now, and more recently those of Hieronymus, the latter being altogether from Bettiah, the extreme north-west district of Tirhut. It is to be expected that, if carefully looked for, many of the plants characteristic of Gorakhpur, beyond the Gandak to the west, may yet be found in Tirhut. Behar, too, requires systematic re-exploration, for, though there are many Behar plants in the collections of Hamilton, Wallich, and Hooker, and especially in those of Kurz, much probably still remains to be collected. Chota Nagpur has received closer attention than Tirhut and Behar, large and valuable collections having been made there by Hooker, Thomson, Anderson, Kurz, Clarke, Gamble, and, especially, by Wood, Campbell, and Haines. But our knowledge of the Chota Nagpur flora is still far from adequate; much has yet to be done, particularly in the southern and south-western parts of the province.

Unlike the other western provinces, Orissa, in place of being a compact natural area, is an exceedingly composite one. The inner highlands form, like those of Chota Nagpur, a plateau with occasional higher hills, some of which actually reach subtemperate altitudes. The ghats that lead up to these highlands are continuous to the north with the eastern escarpments of Chota Nagpur, to the south with the Eastern Ghats—those "mountains of the Circars," from which, more than a century ago, Roxburgh obtained so many plants, of which he has left excellent drawings, that no one has seen since. The submontane strip below is continuous to the north with the drier part of West Bengal, which has a vegetation in

appearance and composition like that of Behar. To the south this strip is continued as a belt below the Eastern Ghats that yielded many species to Russell, Koenig and Roxburgh, towards the end of the eighteenth century, of which even now we know little more than they have told us. The semi-aquatic rice-plain which stretches seaward from this submontane belt is in all essentials the same & the deltaic rice-swamp of Bengal, and the only really distinctive feature of Orissa, among the provinces with which this work deals, is the line of sand-dunes between the rice-plain and the sea. These sand-hills we have to thank for bringing within our area not a few of the littoral species characteristic of the Madras sea-coast.

Our botanical knowledge of this most varied and interesting province is almost blank. The chief collections at our disposal are some valuable ones made by Gamble, which are, however, only large enough to whet the appetite and to demonstrate our ignorance; fuller collections of Orissa sedges and grasses by Walsh; and small but interesting collections of sea-shore plants by Alcock. As we know so little of this enticing region, it has seemed advisable to treat the province, as it is politically limited, as an organic whole. Perhaps it will be found convenient to do so always, rather than to attempt any natural subdivision. The only obvious alternative, so far as our present knowledge goes, is to annex the Orissa highlands to Chota Nagpur, and treat the lowlands as an integral portion of West Bengal.

If we now turn to the three eastern provinces, Chittagong, Tippera, and Bengal, it will be found that, while the existing boundaries of the two former may be left undisturbed, it is advisable for the purposes of this work to subject the last to considerable further subdivision. Just as Tirhut and Behar might have been considered together because both are integral portions of the Upper Gangetic* plain, so might Chittagong and Tippera be treated as one because both are integral portions of the western, or Assam-Arracan, subdivision of Indo-China. The two are, however, naturally well delimited by the valley of the river Feni, and, if for no other reason, their separation is convenient because our knowledge of their flora is so disproportionate. Our acquaintance with the vegetation of Chittagong is based on the work of Roxburgh Wallich's collector Bruce, Hooker and Thomson, Clarke, Wood, and especially Lister and the native collectors of the Calcutta Garden su^{peiv}-ised

by Dowling. The knowledge thus obtained, though doubtless far from complete, is nevertheless respectable. The vegetation of Chittagong may be said to be mainly that characteristic of Arracan, with, however, as might be expected, a considerable admixture of species characteristic of Cachar and Khasia, and with not a few special forms.

Of Tippera we know even less than we do of Orissa. What we do know of the level and the submontane north-western portion we mainly owe to Clarke. Taken by themselves, these lower tracts might be considered no more than a portion of Eastern Bengal, with an unusual admixture of species characteristic of Silhet. But this Silhet element in the flora is sufficiently strong to make it convenient to deal with this tract, the Comilla district, apart from Bengal, and to treat it in connection with its own highlands. As regards these highlands, we know little beyond what is to be learned from the work of Roxburgh and of Buchanan-Hamilton, done eighty to a hundred years ago. Hamilton, indeed, appears to be the only botanist who has explored the hills of "Southern Tippera." Few of Hamilton's specimens, and none of his Tippera ones, are now in India. Roxburgh's specimens, too, are gone, but fortunately India has not been robbed of his drawings, a number of which represent interesting and, but for these drawings, still unknown plants from Hill Tippera. What we do know of the vegetation of these Tippera hills indicates that in the northern parts it is an extension of the flora characteristic of the Bhuban and other ranges of hills in Cachar and South Silhet, outliers of the Lushai range; in the southern parts the flora is a repetition, with variations, of the vegetation of Chittagong.

The Lower Gangetic Plain, or Bengal proper, which from the uniformity of its configuration might be expected to exhibit a corresponding uniformity of vegetation, possesses in reality elements so discordant as to demand further subdivision. Fortunately, when examined in detail, the area is found to lend itself naturally to our Purpose. That portion of the Gangetic delta nearest to the sea, an intricate system of sea-creeks and half-formed islands, densely clothed with a tidal forest of a purely Malayan type, separates itself spontaneously from the alluvial rice-plain to the north, where the river-banks at least are higher, where tanks can be dug that will retain fresh-water, and where only the larger streams.

are much affected by the tides. This dense forest forms the compact and natural Sundribun province, filled with species to be met nowhere else in our area save along the southern coast of Chittagong and, to a minor degree, in the delta of the Mahanadi. Our knowledge of the Sundribun flora we owe to many collectors; Roxburgh, Wallich, Hooker, Thomson, Anderson, Kurz, Gambler, Clarke, have all penetrated the tract. It is, however, to Heisteria that we are chiefly indebted for the more complete exploration of this most interesting region; his collections, assiduously and carefully made during a succession of seasons, have converted what ten years ago was one of the least known portions of Bengal into a tract almost as thoroughly investigated as the rice-plain itself.

Scarcely less necessary and natural is the separation of Eastern Bengal, the country between the Brahmaputra and Tipperah, from the rest of the Lower Gangetic plain. The alluvial rice-swamp here is no doubt only the eastward extension of the plain of Central Bengal; but there are two dominant and, as it happens, very discordant features in the vegetation of the tract that render it a separate treatment essential. One of these features is the vegetation of the Jhils, those inland sheets of fresh-water that are as characteristic of the southern portion of East Bengal as their salt-marshes and tidal creeks are of the Sundribuns. The other is supplied by the curious and distinctive vegetation of the laterite islets that crop through the alluvium in the Mymensingh district of the Dacca division. Our acquaintance with the flora of the Jhils is derived from the labours of Roxburgh, Griffith, Hooker, Clarke, and others; what we know of the Madhopur jungles in Mymensingh we owe entirely to Clarke. Much has yet to be done towards completely investigating these Mymensingh jungles, which in many ways are the most interesting feature of the Lower Gangetic Plain.

Useful, too, is the recognition apart of North Bengal—the country that lies from west to east between the Kosi and the Brahmaputra, from south to north between the Ganges and the lower spurs of the Himalaya. Towards the south and south-east, no doubt, this province repeats the essential features of the alluvial plain of Central and Eastern Bengal, while further to the north it is no more than an eastward continuation of the features exhibited by Tirhut. Even here, however, amid much agreement there is

great dissimilarity; we are now in a land where the turf is uniformly perennial, a circumstance that carries with it more than lies on the surface. The northern portion includes the submontane forest belt; in this respect North Bengal accidentally differs from Tirhut, since along the northern border of that province this forest lies largely within the Nepalese frontier, and so is removed politically from the area with which we have to deal. It is this Subhimalayan forest which supplies the feature that necessitates separation of North Bengal from the rest of the Lower Gangetic plain. Our knowledge of the flora of North Bengal, as regards the central portions, we owe chiefly to Kurz, King, and Clarke; the most westerly district, Purnea, has been well explored only by Buchanan-Hamilton, few of whose specimens, unfortunately, are available in India. The submontane forest has been explored by Anderson, King, Kurz, Clarke, and Gamble, but the attention of few save the last-named botanist, and indeed his also in the main, has been directed to the Terai, which, for reasons already set forth, it has been necessary to exclude from the scope of this work. The Duars, which are merely an eastward extension across the Tista of the same forest belt, have been, however, partially explored by Garable, and more fully examined by Heawood and by Haines, to whose exertions our knowledge of the region is chiefly due. Much, however, yet remains to be done both in the Duars and in Cooch Behar.

Central Bengal, the tract to the south and west of the Ganges and Brahmaputra, lying north of the Sundribuns and east of the Chagirati and Hughli, possesses, as compared with the three Bengal tracts already discussed, the negative feature of being typically representative of the alluvial deltaic rice-plain and nothing more. Except that along the banks of its main streams, so far as these are at all affected by the tides, we find, as a narrow hedge or scattered patches, some species characteristic of the Sundribuns, and that all abandoned river-beds and ponds are covered with water-plants, the whole country is a semi-aquatic rice-plain. The bounds and embankments thrown up here and there throughout the area are, where not occupied by houses or by roadways, thickly covered with the species characteristic of Bengal village shrubberies. Of this tract, as of the Sundribuns, we possess a knowledge that is probably practically complete. Little or nothing

in the *Flora of British India*. We are therefore at liberty to make fuller use of the artificial system than our predecessor could as an aid to identification. In this work, therefore, sometimes happens, a genus contains species with 4 or 5, or 8 or 10 stamens, it will be found to have been included under all the four classes—*Tetrandria*, *Pentandria*, *Octandria*, *Decandra* to which an examination of any individual flower may naturally invite a reference.

The secondary subdivision into orders, in treatises like the *Flora Indica*, is based on the number of free carpels, or at any rate free styles, in the flower. We have, however, our own "natural" orders, as limited in the *Flora of British India*. To deal with another series of orders would only tend to confusion, and the character on which these artificial ones are based is only casually made use of in the keys provided for the genera under the various artificial classes. Moreover, one of the classes, the *Polygamia* which forms the twenty-third class of the artificial system of Linnoeus, and includes such plants as possess both hermaphrodite and unisexual flowers, has been distributed. All the species—and consequently their genera—that possess *any* hermaphrodite flowers will be met with under the classes to which, from the nature of these hermaphrodite flowers, it is found that they are referable.

The last of the Linnean classes, the twenty-fourth, is not given completely, our attention being entirely confined to the Pteridophyta or Vascular Cryptogams, comprising the Ferns and the Fern-Allies. The arrangement and nomenclature adopted for these plants is that used in Hooker and Baker's *Synopsis*, and in Baker's *Fern-Allies* while for the Ferns themselves references are given to the admirable *Handbook of the Ferns of British India and Ceylon* by Beddome.

The following are the abbreviations used:—

F. I.—Roxburgh's *Flora Indica*.

F. B. I.—Hooker's *Flora of British India*.

E. D.—Watt's *Dictionary of the Economic Products of India*.

F. I. C.—Beddome's *Ferns of British India and Ceylon*.

As regards Roxburgh and Hooker, the references are to volume and page. As regards Watt's great work, the references are to the letter, and to the register number of the particular plant or product. In the case of Beddome, whose work is in one volume, the references are to the pages.

II. ARTIFICIAL GUIDE TO THE GENERA.

{Plants with conspicuous flowers (PHANEROGAMIA) :—[p. 22]

t Stamens and pistils in the same flower :—[p. 22]

Male and female organs distinct:—

Stamens not united either above or below :—

Stamens of equal or nearly equal length:—

Stamens solitary.....I. **MONANDRIA.**

Stamens 2.....^{IL} **DIANDRIA.**

Stamens 3.....I^{IL} **TRIANDRIA.**

Stamens 4.....IV. **TETRANDRIA.**

Stamens 5.....V. **PENTANDRIA.**

Stamens 6 equal, or if unequal then 3 long and 3 short

VI. **HEXANDRIA.**

Stamens 7.....VII. **HEPTANDRIA.**

Stamens 8.....VIII. **OCTANDRIA.**

Stamens 9.....IX. **ENNEANDRIA.**

Stamens 10 or 11.....X. **DECANDRIA.**

Stamens 12 or any number between 12 and 19

XI. **DODECANDRIA.**

Stamens 20 or more than 20 :—

Filaments attached to calyx.....XII. **ICOSANDRIA.**

Filaments not attached to calyx.....XIII. **POLYANDRIA.**

Stamens of markedly unequal length:—

Stamens 2 long and 2 short.....XIV. **DIDYNAMIA.**

Stamens 4 long and 2 short.....XV. **TETRADYNAMIA.**

Stamens united :—

Union of stamens occurring in the filaments :—

Stamens in one phalanx or bundle...XVI. **MONADELPHIA.**

Stamens in two phalanges.....XVII. **DIADELPHIA.**

Stamens in three or more phalanges

XVIII. **POLYADELPHIA.**

Union of stamens confined to anthers.....XIX. **SYNGENESIA.**

Male organs attached to and standing upon the female

XX. **GYNANDRIA.**

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fStamens and pistils in different flowers:—[p. 211

Male and female flowers not mixed with hermaphrodite flowers :-

Male and female flowers on the same plant.....XXI. MONŒCIA.

Male and female flowers on different plants. XXII. DIOECIA.

Male and female flowers mixed with hermaphrodite flowers, the unsexual flowers sometimes on the same, sometimes on different plants

.....* XXIII. POLYGAMIA.

†Plants without proper flowers [p. 21]XXIV. CRYPTOGAMIA.

* The *Polygamia* are are polygamo-monœcio

according as the flowers

are *an is hæ* << << << . ^ ^ £ £ other da" 2'S ^ W S " **

Genera that in the following pages ^ ***** by an asterisk- e.g., 106*. *Kleinhovia*—will not be found in the body of the work, but are defined in the APPENDIX.

Class I. MONANDRIA.

Perianth double :—[p. 24]

Leaves opposite, herbs:—

Stigma subcapitate, hardly lobed 598. **Hoppea.**

- Stigmas 2, distinct at the apex of a linear style 599. **Canscora.**

leaves alternate :—

Leaves 2-lobed ; woody shrubs ; fruit a legume 279. **Bauhinia.**

Leaves entire :—

^{Trees} 5 leaves without a leaf-sheath and with distinct reticulate secondary venation ; fruit a drupe 203. **Mangifera.**

Herbs, rarely shrubs ; leaves with large clasping leaf-sheath, and with many parallel nerves passing horizontally or obliquely from

^a midrib but without reticulate secondary venation ; fruit neither ^a legume nor a drupe :—

†Anther 2-celled; calyx tubular or spathaceous ; style slender, embraced below the stigma by the anther; placentas many-^ovuled ; embryo central, straight:—[p. 24]

Ovary 1-celled; placentas 3 parietal; corolla-tube long; stigma turbinate:—

Scape leafless; flowers lilac 029. **Mantisia.**

Stem leafy; flowers yellow ⁹³⁰ - **Globba.**

Ovary 3-celled ; placentas axial:—

Lateral staminodes broad :—

Connective not spurred at the base ; corolla-tube long, slender:—

Filament short¹:—

Connective broad, crested ; stigma turbinate

931. **Ksempferia.**

Connective not crested ; stigma subglobose

932. **Gastrochilus.**

Filament long, narrow ; connective very narrow, not crested; stigma subglobose 933. **Hedychium.**

Connective spurred at the base; corolla-tube funnel-shaped ; stigma 2-lipped, the lips ciliate; bracts forming

....934. **Curcuma.**

” ”
a cone-like spike , .

Lateral staminodes small or 0, rarely narrow and adnate to the lip ; corolla-tube cylindrical :—

†Flowers in dense cone-like spikes :—[p. 24]

Anther-cells divaricate on a short arcuate filament with or without a petaloid crest; stigma small subglobose,

or larger and gibbous behind; spikes almost always^s rising direct from rhizome, rarely at apex of a leafy^f stem.....935. **Amomu** .

Anther-cells contiguous, parallel:—

Filament short, connective produced as a narrow^{ow} appendage as long as the anther; stigma small^{ll} subglobose; spikes usually produced direct from the^e rhizome, sometimes at apex of a leafy stem

936. **Zingiber.**

Filament forming with the produced connective an oblong petaloid process with the contiguous linear anther-cells placed in its middle; stigma with a semilunar pit ciliate round the margin; spikes usually at apex of leafy stem, rarely rising direct^t from the rhizome.....937. **Costus.**

{Flowers in racemes or panicles at the top of leafy stems; filament long, anther-cells divergent at apex; stigma subglobose [p. 23].....938. **Alpinia-**

fAnther 1-celled, laterally adnate to a petaloid filament; calyx^x of free sepals :—[p. 23]

Staminal tube with 5 subsimilar slightly unequal petaloid segments, the 1-celled anther adnate to one of the smaller segments; ovary 3-celled; placentas many-ovuled; style flattened, stigma terminal, capitate; embryo straight

939. **Canna.**

Staminal tube very irregular, 5-6-lobed, 1 or 2 lobes lateral and 1 (the lip) anterior, with 2 or 3 lobes dorsal of which 2 or 1 are hood-like and another bears the anther-cell; placentas 1-ovuled; stigma oblique, dilated or 2-labiate; embryo curved:—

Ovary in appearance 1-celled and 1-ovuled with 2 small rudimentary empty cells; stem leafy with a terminal few-flowered inflorescence and convolute sheathing bracts

940. **Maranta.**

Ovary 3-celled, 3-ovuled :—

Stem leafy with terminal paniced scattered flowers; panicle with convolute deciduous sheathing bracts at the forks, and deciduous bracteoles.....941. **Alpinogyne.**

Stem with broad solitary leaves and lateral clustered heads of flowers; bracts and bracteoles persistent

942. **Phrynium**

*Perianth single, or obsolete or absent:—[p. 23]

Flowers with distinct gamophyllous perianth ; stems herbaceous with opposite leaves and no leaf-sheath, or fleshy jointed and leafless :—

Leaves distinct, opposite; stems herbaceous; style simple

763. **Boerhaavia.**

Leaves 0 ; stems fleshy; styles 2 or more :—

Flowers in the axils of scales of a stoutish cone; seeds albuminous, embryo curved783. **Arthrocnemum.**

Flowers sunk in cavities of the joints of a slender cone; seeds without albumen, embryo conduplicate784. **Salicornia.**

Flowers with perianth reduced to lodicules or bristles in the axils of the glumes of spikelets, or 0; stems grassy, usually leafy at least at the base ; leaves alternate with distinct leaf-sheath, sometimes the sheath alone present :—

1. Flower in axil of a glume only; leaves 3-stichous, rarely 0, sheaths closed in front; fruit a nut with seed free inside; embryo within the albumen ; style simple with 2-3 stigmas :—[p. 26]

Intermediate hermaphrodite glumes few, not more numerous than the 2 or more lowest empty; perianth of 6 hypogynous bristles

1030. **Rynchospora.**

intermediate hermaphrodite glumes usually many, always more numerous than the 1-2 lowest empty :—

Flowering glumes arranged distichously ; perianth absent :—

Hachilla of spikelet deciduous1032. **Kyllinga.**

•Rachilla of spikelet persistent:—

Fruit laterally compressed1033. **Pycreus.**

Fruit dorsally compressed1034. **Juncellus.**

Flowering glumes arranged spirally :—

Base of style constricted or articulate above the fruit :—

Stem leafless; perianth represented by hypogynous bristles

1038. **Eleocharis.**

Stem leafy below ; perianth 0:—

Style base persisting, or if deciduous not leaving a tumour on the fruit:—

Glumes separable from the rachilla 1039. **Pimbristylis.**

Glumes persistent on the rachilla 1040. **Echinolytrum.**

Style base deciduous, leaving a tumour on the fruit

1041. **Bulbostylis.**

Base of style passing gradually into the fruit:—

Perianth of 2 hyaline antero-posterior entire hypogynous scales1042. **Lipocarpha.**

Perianth 0 or of 1-7 setaceous divided or entire hypogynous scales, when 2 not antero-posterior:—

- Hypogynous scales 6, divided to the base into ^{lin ear} segments.....1043. **Erioph^{orUf}**
- Hypogynous scales 1-7, undivided, or 0...1045. **Sci*P^{u j}**
- f Flower interposed between a glume and a palea ; leaves 2-stic^{hous,} sheaths open in front and ligulate at apex behind; fruit a grain * ^{ith} seed adherent to pericarp; embryo outside albumen at base ; s y^{t le}
- 2, distinct, very rarely connate below :—[p. 25]
- Spikelets articulate on their pedicels or deciduous with them ^{•'''}
- Spikelets all similar; styles connate below ...1065. **Imp®**^{ta}**
- Spikelets dissimilar ; styles free:—
- Glume III of sessile spikelet male. 1076. **PogonatheruK¹**
- Glume III of sessile spikelet neuter or 0...1080. **Andropog^{0*1}**
- Spikelets continuous with their pedicels and persistent on the ^{m ;} styles free:—
- Spikelets 1-flowered1088. **Polypog^{on#}**
- Spikelets 2- or more-flowered :—
- Spikelets minute, in globose clusters on an elongated simp^{le} rachis.....1097. **ElytrophorUS.**
- Spikelets conspicuous:—
- Spikelets penicillate with long silky hairs, in large panic^{les}1099. **Phragmitefl-**
- Spikelets not penicillate with silky hairs, in loose panicle^s or spikes.....1101. **Eragrostis***

Class II. DIANDRIA.

Carpels and styles 4, carpels free ; smajl submerged aquatic plants of ^f brackish ponds and marshes, with narrow grassy leaves... 1021. **Rupp*^{8''}**

Carpels solitary, or if 2 or more, connate ; style simple with 1-3 stigmas, or if styles free not more than 2 :—

"Leaves sheathing at the base or occasionally reduced to sheaths" nerves parallel with no reticulate venation :—[p. 28]

fPerianth reduced to small scales or bristles, or absent:—[p. 28]

} Flowers interposed between a glume and a palea; leaves distichous, sheaths open in front and ligulate at apex behind > fruit a grain with embryo outside the albumen ; styles 2, free of rarely connate below :—[p. 27]

§ Spikelets articulate on their pedicels or deciduous with them:—[p. 27]

IFRachis of inflorescence inarticulate ; styles free •— fp 271

••Spikelets very many, minute, densely crowded on the capil- lary branches of a large panicle [p. 27] 1050. **Thyaanolsna.**

**Spikelets secund on a slender flattened or filiform rachis
 $\frac{1}{2} \frac{P^6}{3}$ 1064. **Dimeria.**

II-Kachis of inflorescence articulate:—[p. 26]

Spikelets all similar :—

Racemes of spikelets in compound spiciform panicles;
 styles connate at base1065. **Imperata.**

Racemes of spikelets 2-nate, digitate, or approximate on
 a short main axis ; styles free1068. **Pollinia.**

Spikelets dissimilar:—

Lower floret of sessile spikelet male :—

Spikelets all awned; styles free :—

Spikelets 2-awned107G. **Pogonatherum.**

Spikelets 1-awned :—

Leaves lanceolate; spikelets 2-flowered

1077. **Apocopis.**

Leaves cordate at base; spikelets 1-flowered

1078. **Arthraxon.**

Spikelets 2-nate, only the upper one awned; styles
 connate below1079. **Lophopogon.**

Lower floret of all the spikelets empty

1080. **Andropogon.**

§Spikelets continuous with their pedicels and persistent on
 them ; styles free :—[p. 26]

Leaf-blade transversely trabeculately veined between the
 Parallel nerves1096. **Centotheca.**

Leaf-blade without any transverse venation :—

Spikelets 1-flowered :—

Glumes I and II firm, awned1088. **Polypogon.**

Glumes I and II membranous, not awned

1090. **Sporobolus.**

Spikelets 2- or more-flowered :—

Spikelets minute, in globose clusters on a long simple
 rachis1097. **Elytrophorus.**

Spikelets conspicuous:—

Spikelets penicillate with long silky hairs, paniced

1099. **Phragmites.**

Spikelets not penicillate, loosely paniced or spicate

1101. **Eragrostis.**

[†]F₁ flowers in the axil of a glume only; leaves 3-stichous, or only
⁺basal, sometimes 0, sheaths closed in front; fruit a minute
ⁿUt with embryo inside the albumen; style simple with 2-3
^s†gmas:—[p. 26]

Intermediate hermaphrodite glumes few, not more numerous than the 2 or more lowest empty :—

Style 2-fid ; perianth of 6 hypogynous bristles

1030. **Rynchospora***

Style 3-fid; perianth 0.....1031. **Cladium¹¹**

Intermediate hermaphrodite glumes usually many, always fewer numerous than the 1-2 lowest empty :—

Flowering glumes distichous; perianth 0 :—

Glume of spikelet deciduous.....1032. **Kylling***

Rachilla of spikelet persistent:—

Fruit distinctly compressed :—

Fruit laterally compressed.....1033. **Pycnus.**

Fruit dorsally compressed.....1034. **Juncellus.**

Fruit trigonous.....1035. **Cyperus.**

Flowering glumes spirally arranged :—

Base of style constricted or articulate above the fruit:—

Stem leafless ; perianth of bristles.....1038. **Eleocharis.**

Stem leafy below ; perianth 0 :—

Style-base persisting, or if deciduous not leaving & tumour on the fruit:—

Glumes separable from the rachilla

1039. **Fimbristylis.**

Glumes persistent on the rachilla

1040. **Echinolytrum.**

Style-base deciduous, leaving a tumour on the fruit

1041. **Bulbostylis.**

Base of style passing gradually into the fruit; perianth usually of scales or bristles:—

Hypogynous scales C, divided to the base into linear segments.....1043. **Eriophorum.**

Hypogynous scales, if present, undivided:—

Leaves hairy ; hypogynous scales 6, or 3, or 0

1044. **Fuirena.**

Leaves glabrous; hypogynous scales 7-1, or 0

1045. **Scirpus.**

f Perianth conspicuous, in two whorls of 3 each :—[p. 26]

Perianth segments in two dissimilar whorls; staminodes 4 ; leaves

thin.....;.....:•-:••".....;.....976. **Aneilema.**

Perianth segments all similar, corolline; staminode 1; leaves

rigid....."•"•.....;••"-;.....928. **Apostasia.**

•Leaves not sheathing at the base; lamina pinnately nerved, rarely parallel-nerved but then with reticulate secondary venation, occasionally, when submerged, multifid:—[p. 26]

Perianth 0; small membranous or fleshy herbs with minute flowers in slender simple spikes; leaves opposite or whorled

792. **Peperomia.**

Perianth of 2 distinct whorls, sepals and petals always present :—

Petals free:—

Leaves alternate :—

Herbs ; sepals and petals each 4 ; leaves simple, lobes

39. **Nasturtium.**

Trees or shrubs; sepals 5 or more and petals 5 ; leaves simple or compound odd-pinnate :—

Fruit a small, obliquely subglobose drupe; leaves simple or compound.....201. **Meliosma.**

Fruit of 1-5 linear-oblong, membranous samaras; leaves compound.....148. **Ailanthus.**

Leaves opposite :—

Shrubs; petals inserted within the calyx and outside the flat disk; fruit rather large, fleshy.....182. **Salacia.**

Herbs; petals inserted at the mouth of the calyx-tube on the edge of the cupular disk ; fruit very small, dry

342. **Ammannia.**

Petals connate in a gamophyllous corolla :—

[Corolla regular; stamens alternate with carpels, facing each other never accompanied by staminodes ; leaves opposite :—[p. HO]

Corolla-lobes imbricate:—

Climbing shrubs with berry-like fruits; leaves compound or simple.....531. **Jasminum.**

Erect trees with dry capsular fruits :—

Leaves simple, fruit a compressed leathery capsule

532. **Nyctanthes.**

Leaves compound, odd-pinnate; fruit an obovoid woody capsule.....533. **Schrebera.**

Corolla-lobes valvate ; leaves simple :—

Erect trees or shrubs, with thinnish leaves pinnately nerved:—

Flowers in axillary panicles or cymes; corolla-tube very short so that its lobes form often almost free petals, or petals connate in two pairs.....534. **Linociera.**

Flowers in terminal panicles; corolla-tube always obvious

536. **Ligustrum.**

Climbing shrubs, with thick leathery leaves strongly 3-nerved from the base.....537. **Myxopyrum.**

f Corolla irregular, often markedly so; even when only somewhat oblique, the stamens not alternate with carpels but with corolla lobes and obviously either a posterior or, less frequently* anterior pair, and occasionally accompanied by 2, sometimes even by 3 staminodes:—[p. 29]

Corolla spurred, distinctly 2-lipped, the stamens alternate with lobes of lower lip; ovary 1-celled; herbs of wet places ponds with radical rosulate sometimes obsolete leaves, or with submerged capillary multifid leaves. 671. **Utricularia***

Corolla not spurred:—

Stamens towards the upper side of flower, representing perfect posterior pair; ovary 2-celled; leaves opposite:—

Corolla subrotate, lobes 4, one rather larger; stamens at sides of uppermost lobe, staminodes 0...663. **YeroBic***

Corolla distinctly 2-lipped; staminodes 2, representing an imperfect anterior pair of stamens:—

Stamens and staminodes both inserted within corolla-tube and included. 654. **Dopatrium**.

Stamens only inserted within the tube, staminodes adnate to corolla-throat, both exerted:—

Calyx 5-partite, lobes all narrow:—

Leaves with main-veins more or less parallel from base; staminodes unequally 2-lobed; capsule short

657. **Ilysanthes**.

Leaves with main-veins pinnate; staminodes entire; capsule long. 658. **Bonnaya**^

Calyx 4-partite, upper and lower lobes large, lateral narrow. 659. **Curanga**.

Stamens towards the lower side of the flower or at least not obviously representing a posterior pair:—

Small prostrate diffuse or creeping herbs, with opposite or fascicled leaves never exceeding 25 in. long and with very minute flowers 7-10 in. long:—

Calyx tubular 5-angled, shortly acutely 5-fid

660. **Hicrocarpsea**.

Calyx campanulate, with 3-4 short obtuse lobes

661. **Glossostigma**.

Herbs or shrubs, with conspicuous leaves and usually conspicuous flowers; leaves never under 5 in. long:—

Ovules in each cell of the ovary or on each placenta more than 2, or if only 2 then placed one above the other; anthers 2-celled:—

Anther-cells divergent; posterior stamens almost always represented by staminodes :—

Anther-cells confluent at apex; ovary 1-celled, sometimes obscurely so:—

Leaves several alternate; capsule ellipsoid, included in the calyx...675. **Rhynchoglossum.**

Leaves opposite or whorled or leaf solitary; capsule much longer than calyx:—

Flowers subsessile in dense subcapitate cymes; stem leafless or scaly below, with 4 leaves in a whorl at the apex. 674. **Tetraphyllum.**

Flowers pedicelled on axillary peduncles :—

Stigma oblique; leaf solitary or leaves opposite. 672. **Didymocarpus.**

Stigma shortly 2-fid ; leaves opposite

673. **Chirita.**

Anther-cells not confluent; leaves opposite :—

Ovary 1-celled, the ovules attached under the laminae of a projecting parietal 2-laminate placenta 685. **Martynia.**

Ovary 2-celled, the ovules attached to an inconspicuous placenta on the middle of the septum

689. **Nelsonia.**

Anther-cells parallel or one placed higher up than the other :—

Leaves alternate crowded, subradical; seeds not supported on rigid retinacula 688. **Elytraria.**

Leaves opposite:—

II Seeds supported on hard retinacula:—[p. 32]

Corolla-lobes twisted to the left in bud

701. **Daedalacanthus.**

Corolla-lobes imbricated in bud:—

I Ovules 3-10 in each cell; capsule normally 6- or more-seeded :—[p. 32]

Capsule compressed at right angles to the septum; seeds ovoid, hardly compressed

703. **Andrographis.**

Capsule subterete; seeds much compressed :—

§Corolla - tube narrowly cylindric, slender, straight; ovary pubescent [p. 32]. 704. **Gymnostachyum.**

**Base of style passing gradually into the fruit, perianth usually of scales or bristles :—[p. 33]

Hypogynous scales 6, divided to the base into linear segm^{nt} 1043. **Eriophorum.**

Hypogynous scales, if any, undivided :—

Leaves hairy ; hypogynous scales 6, or 3, or 0

1044. **Fuirena-**

Leaves glabrous; hypogynous scales 7-1, or 0 1045. **Scirp^{us}**

f Flowers interposed between a glume and a palea ; leaves distic^{hous} sheaths open in front and ligulate at apex behind; fruit a grain *with embryo outside the albumen; styles 2 free or, rarely, connate below [p. 33]

{Mature spikelets separating entirely from their pedicels, or ^tWind with them; spikelets similar or differing in sex and structu^e; perfect spikelets with 2 heteromorphous florets, the upper hernia phrodite the lower male or barren:—[p. 37]

Rachis continued beyond upper spikelet; glumes 4; spikelets 1-2-flowered, subsecund.....1049. **Chamaeraphis.**

Rachis not continued beyond upper spikelet:—

§ Spikelets usually in continuous spikes, racemes or panicles, glumes herbaceous or membranous, the lower smaller, sometimes very small or suppressed; lower flowering glume generally resembling the outer glumes in structure and venation; the upper firmer, at length rigid, often papery to crustaceous, rarely awned or mucronate:—[p. 35]

II Spikelets 2-flowered, upper 2-sexual, lower male or neuter, rarely (*Isachne*) both fertile:—[p. 35]

Mature spikelets surrounded singly or in clusters by a whorl of naked or plumose bristles which falls with the spikelets; styles free or connate below.....1047. **Pennisetum-**

Mature spikelets falling entire and singly from the tips of their pedicels; styles free:—

Spikelets with an involucl of bristles.....1048. **Setaria.**

Spikelets not subtended by bristles:—

Glumes 4, all very minute; spikelets very numerous and very small, crowded on the capillary branches of a very large panicle.....1050. **Thy sanolsena.**

Glumes 4, all conspicuous or 3 conspicuous and 1 minute or obsolete:—

§ Lowest glume distinct :—[p. 35]

Glumes I and II separately deciduous; spikelets subglobose, paniced [p. 35]......1051. **Isachne.

**Glumes I and II not separately deciduous:—
[p. 34]

Lowest glume, at least, subulate-aristate; spikelets fascicled or solitary on a simple axis or on the branches of a panicle ...1052. **Oplismenus.**

Lowest glume not subulate-aristate :—

Glume II fimbriate; glume III with a deep-cleft palea and a male floret 1053. **Axonopus.**

Glume II not fimbriate; glume III with a 2-nerved or hyaline rudimentary palea or quite empty.....1054. **Panicum.**

§Lowest glume minute or 0:—[p. 34]

Lowest glume minute but usually present; glume III with generally a minute palea, its nerves straight, prominent1055. **Digitaria.**

Lowest glume absent; glume II (= glume III of *Digitaria*) empty, its marginal nerves curved:—

Spikelets not thickened at the base

1056. **Paspalum.**

Spikelets thickened at the base

1057. **Eriochloa.**

11 Spikelets 1-flowered, deciduous with their pedicels :—[p. 34]

Spikelets fascicled all round a slender rachis, falling in clusters of 2-4; outer glume echinate; styles free or connate.....1061. **Tragus.**

Spikelets not clustered, falling singly; glumes not echinate; styles connate below :—

Glumes without awns.....1063. **Zoysia.**

Glumes long-awned.....1062. **Perotis.**

8Spikelets usually in pairs, one sessile the other pedicelled, or the terminal 3-nate or solitary, in the axis of a usually spike-like raceme; outer glumes more or less rigid and firmer than the flowering glumes, the lower always larger than the florets; flowering glumes membranous, often hyaline, that of the upper floret often awned or reduced to an awn; styles always distinct :—[p. 34]

ttSpikelets all similar, in open or contracted panicles:—[p. 36]

Kacemes of spikelets in open, compound, much-branched panicles:—

Spikelets awnless.....1066. **Saccharum.**

Spikelets awned.....1067. **Erianthus.**

Hacemes of spikelets 2-nate, digitate, or approximate on a short main-axis.....1068. **Pollinia.**

ffSpikelets dissimilar or (*Ophiurus*) spikelets solitary :—
[p. 35]

Spikelets sunk in pits of an articulate fragile rachis :—

Sessile spikelets solitary in each internode of the spike:—

Ss[^]sile spikelets not accompanied by an upper spik[^]et
or even the pedicel of one.....1069. **Ophiur^{UB}***

Sessile spikelets accompanied by dissimilar pedicelled
spikelets:—

Glume I globose, inflated, pitted... 1070. **Manisuri***

Glume I smooth:—

Glume I ovate-oblong1071. **Rottboellia-**

Glume I caudate1072. **Yossia-**

Sessile spikelets 2, opposite, in each internode

1073. **Mnesithea***

Spikelets not sunk in nodes of the rachis:—

Spikelets 3, a sessile 2-flowered and two pedicelled.
enclosed in a peduncled spathe on a short 1-nodal
inarticulate rachis.....1074. **Apluda***

Spikelets many or few on a plurinodal articulate rachis:—

Spikelets many, 2-nate rarely solitary, in spiciform
racemes solitary 2-nate or digitate or approximate on
a short main-rachis; lower floret of sessile spikelet
male:—

Margin of glume I of sessile spikelet inflexed

1075. **Ischaemum***

Margin of glume I of sessile spikelet not inflexed :—

Spikelets 2-flowered; leaves lanceolate

1077. **Apocopis-**

Spikelets 1-flowered; leaves cordate at junction
with sheath1078. **Arthraxon.**

Spikelets in compound panicles or spiciform racemes
variously disposed, 2-nate rarely 3-nate; lower floret
of all the spikelets empty; upper usually awned o:
reduced to an awn:—

Spikelets in alternating pairs or the lowest solitary.—

Sessile spikelets more than 2, usually man?'
inflorescence usually elongate... 1080. **Andropotfon.**

Sessile spikelets 2 only; inflorescence very short

1081. **Sudanthistiria.**

Spikelets dimorphic, the 4 lower S[^]sile, forming an
involucre round the upper:~

HRachis articulate above the involucre spikelets

[P, 37J]W82. **AntWstiria.**

- JJRachis articulate below the involucrent spikelets
[p. 36].....1083. **Iseilema.**
- Mature spikelets breaking up, leaving the persistent or subpersistent
glumes on the pedicel, or if falling entire not composed of 2
neteromorphous florets:—[p. 34]
- § Spikelets not inserted in notches or pits of a simple rachis:—
[p. 39]
- Spikelets panicled, or if spicate not secund:—[p. 38]
- Spikelets 1-flowered, rachilla not or rarely produced beyond
the floret; awns when present twisted; styles free :—
- Glume III hardened in fruit and tightly clasping the grain ;
awns usually 3-fid.....1087. **Aristida.**
- Glumes all membranous ; awns if present simple :—
- Spikelets laterally compressed :—
- Glumes I and II firm, awned1088. **Polypogon.**
- Glumes I and II membranous, not awned :—
- Pericarp of grain adnate to seed1089. **Agrostis.**
- Pericarp of grain loose.....1090. **Sporobolus.**
- Spikelets very narrow, terete ; glumes finely acuminate
or awned.....1091. **Garnotia.**
- Spikelets 2- or more-flowered :—
- Rachilla not continued beyond the upper floret:—
- Spikelets not awned; rachilla elongated between the
flowering glumes, but not penicillately hairy; styles free
1092. **Coelachne.**
- Spikelets awned :—
- Florets 2, dissimilar, the lower awnless male or barren ;
styles free or connate below.....1093. **Arundinella.**
- Florets 2-many, similar except the uppermost, which
are gradually reduced ; styles free ...1094. **Eriachne.**
- Rachilla continued beyond the upper floret or if not con-
tinued (*Phragmites*) then elongated between the flowering
glumes and penicillately hairy ; styles always free:—
- Spikelets awned with awn twisted.....1095. **Ayena.**
- Spikelets not awned or if awned with the awn not
twisted:—
- Leaves tessellately nerved ; fruiting glumes with reflexed
submarginal bristles.....1096. **Centotheca.**
- Leaves parallel-nerved; fruiting glumes without any
submarginal bristles :—
- **Spikelets very minute, in globose clusters on an
elongated simple rachis [p. 38]...1097. **Elytrophoms.**

**Spikelets conspicuous, not in globose clusters:—
[p. 37]

Flowering glumes 1-3-nerved :—

Spikelets penicillate with long silky hairs on the flowering glumes or the callus or both; paniculate; lowest flowering glume sometimes male or neuter:—

Bachilla glabrous; flowering glumes dorsally hairy beyond the middle.1098. **Arundo.**

Rachilla hirsute:—

Flowering glumes glabrous

1099. **Phragmites.**

Flowering glumes penicillate with long hairs

1100. **Triraphis.**

Spikelets not penicillate with long silky hairs; many-flowered:—

Outer glumes shorter than lowest flowering glume ; grain very minute, terete

1101. **Eragrostifl.**

Outer glumes longer than lowest -flowering glume ; grain broad, concave

1102. **Myriostachya.**

Flowering glumes 5- or more-nerved; spikelets paniced.1103. **BromUB.**

^ [Spikelets 2-seriate and secund on an inarticulate spike or on the spiciform branches of a panicle; styles free :—[p. 36]

Spikelets on the long spiciform branches of a panicle :—

Flowering glumes 3-toothed.1104. **DiplachnC**

Flowering glumes entire or simply aristate

1105. **Leptochloa.**

Spikelets in simply digitate or simply racemed spikes :—

Spikelets in pedicelled, deciduous, articulate clusters

1106. **Gracilea.**

Spikelets not clustered :__

Spikelets 1-flowered :—

Spikelets awnless:__

Spikes solitary terminal.1107. **Microchloa.**

Spikes digitate.im c **yno**don.

Spikelets awned ; spikes solitary spicate or racemed

<^i™wa o

1109 - **Chloris.**

bpikets 2- or more-flowered :—

Spikelets crowded on a solitary spike.1110. **TripogoB.**

Spikelets in numerous spikes:—

Spikelets digitate or whorled HH. Eleusine.

Spikelets racemed on a long rachis

1112. **Dinebra.**

§Spikelets inserted in notches or pits of a simple rachis:—

[p. 37]

Spikelets solitary at the nodes of the spikes :—

Plane of spikelets radial to the rachis HI³- **Oropetium.**

Plane of spikelets tangential to the rachis ...1114. **Triticum.**

Spikelets 2 or more, collected in fascicles at the nodes of the spikes.....1115- **Hordeum.**

flowers not in spikelets, inflorescence without glumaceous bracts :—
[P. 33]

^{Le}aves long and narrow, sheathing at the base, rarely reduced to scales or sheaths, nerves all parallel; perianth 2-seriate, with normally 3^{se} segments in each whorl :—

°vary inferior :—

Perianth of 2 dissimilar whorls, 3 outer segments calycine; leaves all radical tufted ; aquatic plants.....^{888, B1} y^{xa}"

Perianth of 2 similar whorls, all 6 segments petaloid:—

Ovary- 1-celled; leaves mostly radical tufted, sometimes all reduced to scales.....^{89L} **Burmannia.**

Ovary 3-celled; stems more or less leafy :—

Stem leafless between the few radical basal leaves and the single large plicate floral leaf just under the inflorescence

948. **Cipura.**

Ovary Stem leafy throughout.....^{949,} **Belamcanda.**
superior:—

Perianth of 2 dissimilar whorls; outer segments calycine :--

Stem a leafless scape with capitate flowers; leaves all radical
974. **XyriB.**

Stem leafy:—

Cymes solitary, within a spathaceous bract

975. **Commelina.**

Cymes paniculate, bracts not spathaceous ...976. **Aneilema.**

Perianth of 2 similar whorls, more or less calycine; erect tufted
L grassy herbs.....^{98L JunCUB#}

7®"* not sheathing at the base, venation reticulate, never reduced
se ^aths or scales; short and broad, or if narrow with penanth-
Sments 4 or 5 in each whorl:-

perianth none; styles free; flowers in cylindrio spikes; leaves
^{S1*}ple[p. 40]..... 791. **Piper.**

f Perianth of at least one whorl present:—[p. 39]

Leaves compound :

Leaflets gland-dotted ; leaves 3-foliolate or odd-pinnate

133. **Zanthoxylu***

Leaflets not gland-dotted:—

Leaves even-pinnate; leaflets opposite :—

Petals 5.....278. **Cassia.**

Petal 1.....284. **Intsia.**

Leaves odd-pinnate; leaflets alternate.....148. **Ailantn^{us}.**

Leaves simple:—

Styles 3 or more, free ; carpels united :—

Ovary 1-celled; leaves always opposite; petals small ^{but}
usually present.....66. **Stellar^a***

Ovary 3-5-celled:—

Leaves opposite or falsely whorled or alternate; petals 0
383. **Milugo.**

Leaves always opposite ; petals 3-5.....74. **Bergia.**

Style simple or styles connate:—

Leaves alternate:—

Leaves entire.....169. **Ox.**

Leaves 2-lobed at apex.....279. **Bauhinia.**

Leaves opposite:—

Shrubs, trees or woody climbers :—

Sepals free, orbicular, imbricate :—

Fruit a berry; seeds not winged.....182. **Salacia.**

Fruit a capsule ; seeds winged.....183. **Hippocratea.**

Sepals connate below, valvate; fruit a drupe

203*. **Bouea***

Herbs:—

Sepals 5, free.....69. **PolycarpoB-**

Sepals connate in a campanulate tube :—

Leaves large, 3-5-nerved from the base, often unequal,
calyx-teeth and petals always 3.....340. **Sonerila***

Leaves small, penninerved, equal; calyx-teeth 3-5i
petals often 0.....342. **Ammanni****

Class IY. TETRANDRIA.

•Inflorescence spicate on a fleshy spadix subtended by a large spathe;
leaves simple :—[p. 41]

§Epiphytic climbers with smooth leaves:—[p. 41]

IFBerries free ; ovules and seeds solitary [p. 41]...1009. **ScindapsUS***

^Berries confluent; ovules and seeds numerous:— [p. 40]

1010. **Rhaphidophora.**

Marsh herbs with leaves prickly on stalks and nerves [p.40] 1012. **Lasia.**

• Inflorescence never subtended by a spathe :— [p. 40]

• Floating or submerged aquatic herbs ; leaves simple :—

Petioles of upper rosulate floating leaves inflated and vesicular, the lower submerged leaves pectinate opposite.....³⁵³ - **Trapa.**

Petioles, if present, not inflated and vesicular :—

• Perianth double, of calyx and corolla:—

Corolla gamopetalous; leaves large, floating, cordate, all alternate; ovary 1-celled.....601. **Limnanthemum.**

Corolla of 2-4 free petals; leaves small, submerged, narrow-linear, usually whorled, rarely alternate; ovary 4- or 2-celled:—

Ovules solitary, pendulous in each cell of the inferior ovary ; hypogynous scales absent 318. **Myriophyllum.**

Ovules several on axial placentas in each cell of the free ovary at base of calyx-tube; hypogynous scales 4, 2-fid

343. **Hydrolythrum.**

Perianth single, of 4 green, valvate segments; carpels 4

1020. **Potamogeton.**

Terrestrial herbs, shrubs, or trees, or if growing in or near ponds or marshes, the leaves not floating or submerged :—

Climbing herbs or shrubs, raising themselves by the aid of spirally listed tendrils; leaves simple or compound; petals valvate, stamens

° Pposite petals.....¹⁸⁸, Yitis,

E ^ ct herbs, shrubs, or trees, or if climbing raising themselves by voluble stems or by prickles, if with tendrils (*litwhinia* sometimes)

th^{ese} si^mply hooked or subcircinate not spiral :—

Leaves compound:—

Leaflets gland-dotted.....133. **Zanthoxylum.**

Leaflets not gland-dotted :—

Ovary 5-celled ; seeds winged¹⁶⁶, **Cedrela.**

Ovary 1-celled ; seeds not winged :—

Ovule and seed solitary; unarmed trees with once pinnate <*AT^m 210. **Rhus-**

odd-pinnate leaves....., ..h

Ovules and seeds many; prickly and bristly herbs with digitately twice pinnate even-pinnate leaves...300. **Mimos**

Leaves simple :—

tLeaves alternate :— [p. 43]

+Perianth single:— [p. 42]

"Perianth tubular and constricted above the ov^uy, stamens alternate with perianth-lobes [p.42] 807. **Elaeagn** s.

- * "Perianth deeply partite or the segments quite free, ^{if}
 tubular below not constricted above the ovary :—[p-⁴¹->
 Ovary inferior..... 330. **Gyrocarpu***
 Ovary superior:—
 Stamens alternate with perianth-segments
 786. **Rivin***
- Stamens opposite perianth-segments:—
 Perianth-segments valvate ; shrubs or trees:—
 Ovule solitary:—
 Ovule erect; bracts small; stem climbing
 172. **Cansjer***
 Ovule pendulous ; bracts large ; stem erect
 171. **LepionuruB***
 Ovules 2, ascending ; stem erect 803. **Helici*'**
 Perianth-segments imbricate; ovule solitary :—
 Perianth green; ovule pendulous ; small trees
 853. **Celti***
 Perianth coloured ; ovule erect; herbs
 787. **Polygonum-**
- JPerianth double:—[p. 41]
 ft Petals free or only slightly connate below :—[p. 43]
 Petals valvate..... 169. **OlaX.**
 Petals imbricate:—
 § Style simple or styles united :—[p. 43]
 Ovary of 1 solitary free carpel; leaves 2-lobed at
 the apex..... 279. **Bauhinia***
 Ovary of 2 or more connate carpels; leaves not
 2-lobed at apex :—
 • Ovary superior; petals hypogynous :—[p. 43]
 Leaves pinnately lobed ; fruit a 2-valved capsule
 with a partition (replum) between the 2 pla-
 centas :—
 Fruit long, narrow, cylindrical
 39. **Nasturtium.**
 Fruit short, orbicular..... 46. **Lepidiuitt***
 Leaves not lobed, margins entire or only
 serrate:—
 Stamens alternate with petals:—
 Ovules and seeds pendulous 176. **Ilex.**
 Ovules and seeds erect or ascending
 180. **Gymnosporia.**
 Stamens opposite the petals 200. **Sabia.**

TOvary inferior ; petals epigynous [p. 42]

352. **Ludwigia.**

§Styles 2 or more than 2, free:—[p. 42]

Trees or shrubs ; stamens opposite the petals

355. **Homalium.**

Small viscid-glandular herbs with insectivorous leaves; stamens alternate with the petals

316. **Drosera.**

tfPetals united in a gamophyllous corolla; ovary superior :—[p. 42]

Stamens opposite the corolla-lobes ; leaves entire :—

Small annual herbs; seeds many in a circumscissile capsule.....516. **Centunculus.**

Shrubs, mostly climbing; seeds solitary in a small berry-like fruit.....⁵¹⁸- **Embelia.**

Stamens alternate with the corolla-lobes :—

Corolla plicate in bud ; ovules many; leaves entire, or variously lobed or pinnately cut; shrubs or herbs, often prickly.....⁶³⁵- **Solanum.**

Corolla-lobes imbricate in bud; leaves entire, or with margins serrate or crenate; unarmed:—

Ovules 2 in each chamber of a 2-celled, or 1 in each chamber of a 4-celled ovary ; corolla quite regular:—

Styles 2; a prostrate herb.....609. **Coldema.**

Style terminal on an entire ovary; trees or shrubs:—

Style with a twice 2-partite stigma, not annulate.....⁶⁰⁴. **Cordia.**

Style shortly 2-lobed, with a horizontal ring below the stigma605. **Tournefortia.**

Ovules many in each cell of a 2-celled ovary; corolla somewhat oblique; herbs.....642. **Celsia.**

tLeaves opposite:—[p. 41]

Perianth single; trees; lobes of perianth valvate :—

Ovary 1-celled; ovules 2-3 on a free central placenta; stamens opposite perianth-lobes.....810. **Santalum.**

Ovary 2-celled; ovules many on axial placentas; stamens alternate with perianth-lobes

346. **Crypteroma.**

Perianth double, or if single (*Ammannia* sometimes), then small herbs:—

Petals free or, rarely (*Ammannia* sometimes), 0 :—

Stamens hypogynous:—

Sepals free :—

Styles 3-5, free ; small herbs:—

Ovary 1-celled.....66. **Stellaria.**

Ovary 2-5-celled.....74. **Bergia.**

Styles combined:—

Herbs; ovary 1-celled.....69. **Polycarpo**"*

Shrubs; ovary 3-celled.....".....182. **Salacia.**

Sepals connate below.....203*. **Bouea.**

Stamens inserted on the mouth of a campanulate gamosepalous calyx:—

Smallherbs; petals minute or 0....342. **Ammannia.**

Shrubs; petals conspicuous, wrinkled... 345. **Lawsonia.**

Petals connate in a gamophyllous corolla :—

Stamens opposite the corolla-lobes....808. **Loranthus.**

Stamens alternate with corolla-lobes:—

Ovary inferior :—[p. 46]

Leaves opposite ; stipules 0 ...506. **Campanumcea.**

Leaves in decussate rarely distichous pairs with interpetioiar stipules, or if stipules 0 leaves whorled:—

^1 Ovules usually numerous, never fewer than 2 in each cell of the ovary :—[p. 45]

Corolla-lobes twisted in bud:—

Fruit a capsule; seeds many, small; flowers in terminal panicles.....407. **Wendlandia.**

Fruit a berry; seeds few, large; flowers axillary :—

Flowers in spikes; ovules pendulous from apex of cell.....420. **Petunga.**

Flowers in fascicles or small cymes :—

Ovules 6-10 in each cell, pendulous from its apex.....421. **Hyptianthera***

Ovules 2-3 in each cell, attached to a lateral placenta.....422. **Diplospora***

Corolla-lobes valvate in bud: -

Corolla-lobes reduplicate-valvate; shrubs with indehiscent berries.....415. **Adenosacme.**

Corolla-lobes simply valvate ; herbs or under-shrubs with dehiscent capsules, or if fruit indehiscent (*HedyotU* sometimes) then small herbs with dry minute fruits :—

Calyx-teeth in fruit contiguous; capsule
loculicidal or septicidal, or rarely inde-
hiscent; seeds usually angular

410. **Hedyotis.**

Calyx-teeth in fruit remote; capsule loculi-
cidal above them, rarely indehiscent:—

Seeds minute, angular

411. **Oldenlandia.**

Seeds plano-convex, or globose with a
ventral cavity..... 412. **Anotis.**

II Ovules solitary in each cell of the ovary:—
[p. 44]

Corolla-lobes twisted in bud :—

Flowers paniculate or corymbose :—

Bracts coriaceous, never sheathing

425. **Ixora.**

Bracts membranous, the lower sheathing

424. **Pavetta.**

Flowers axillary, fascicled or solitary

426. **Coffea.**

Corolla-lobes valvate in bud :—

* *Leaves opposed with interpetiolar stipules:—

[P- 46]

ffFruit a fleshy or dry drupe, with two or
more pyrenes :— [p. 46]

Flowers cohering by their calyx-tubes in
a firmly fleshy head 427. **Morinda.**

Flowers free :—

Erect shrubs or trees; pyrenes in a
leathery or fleshy drupe :—

Leaves decussate:—

Flowers in axillary fascicles or
cymes:—

Ovary 2-celled

428. **Canthium.**

Ovary 3-5-celled

429. **Yangueria.**

Flowers in terminal cymes

430. **Psychotria.**

Leaves distichous 431. **Lasianthus.**

Twining herbs or shrubs ; pyrenes in a
papery drupe..... 433. **Paederia.**

BENGAL PLANTS.

[Art^{al} Guide

f fFruit of 2 separable cocci; herbs:—IP⁻ - 45]

Cocci indehiscent:—

Flowers in cymes; cocci snia^U
434. **Kno**^{xifti}

Flowers solitary, axillary; cocci ^{large,} ^{ax.}
corky..... 435. **nj**^{uror}

Cocci one only or both ul^{imately de-}
hiscing ventrally. . . . 436. **Speri**^{nacoe}

**Leaves whorled, stipules 0 [p. 45] — hiapi
437. **R**^{uu}

I Ovary superior :-[p. 44]

Corolla regular:—•

Ovary 1-celled:—

Ovule solitary..... M * j ! » - rti *
bU. **Salvador**^{*}

Ovules many.....

Ovary 2-celled ; ovules many : —

Corolla-lobes contorted:— **pwacu**

Corolla-lobes twisted to right...59b. ** » . **us**

Corolla-lobes twisted to left...542. **Melodin**

Corolla-lobes not twisted :—

Fruit indehiscent..... 595. **Strychnos**

Fruit dehiscent:—

Corolla-lobes valvate..... 592. **litrasacme**

Corolla-lobes imbricate..... 593. **Buddleia**

Corolla oblique :—

Ovules in each cell of ovary numerous

662. **Scoparia**

Ovules in each cell of ovary solitary or at ^{most 2,}
collateral:—

Fruit not 4-lobed: —

Fruit a small drupe with 4 pyrenes

724. **Callicarp**^{*}

Fruit a leathery capsule..... 735. **Avicennia**

Fruit 4-lobed, separating into 4 ^{distinct}
nutlets:—

§Calyx subequally 5-lobed :—[p. 47]

^Calyx-lobes short; stamens **exserted** :—

[P. 47]

Corolla 4-fid with a spreading Up

746. **Pogostemon**^{*}

Corolla subequally 4-fid

747. **DysophyN**^{*}

IT Calyx-lobes long, plumose [p. 46]

748. **Colcbrookia.**

§Calyx declinate 2-lipped [p. 46] 749. **Pcrilla.**

GLASS Y. PENTANDRIA.

I[^]nflorescence spicate on a fleshy spadix subtended by a large spathe; leaves simple :—

Eⁱphytic climbers with smooth leaf-stalks and leaves

1010. **Rhaphidophora.**

Mars^h herbs With prickly leaf-stalks and leaves 1012. **Lasia.**

Infl^orescence not within a spathe, or if spathaceous not spicate :—

Fⁱloating or partly submerged aquatic herbs :—

U^rolla irregular, petals free ; stems fistular, floating, and rooting at the nodes ; branches leafy, erect; leaves not floating :—

owers large, showy, in few-flowered racemes; leaves linear-lanceolate, simple; ovary 5-celled, superior. 132. **Hydroccra.**

owers small, in many-flowered umbels; leaves pinnately compound; ovary 2-celled, inferior. 390. **(Enanthe.**

Co^rolla regular, petals more or less connate, leaves floating :—

O^vary 1-celled :—

Leaves small, whorled, spatulate or orbicular, somewhat vesicular; petals connate in a cap ; fruit a 5-valved capsule

317. **Aldrovanda.**

Leaves large, cordate, alternate, or only subopposite, flat;

Petals connate in a deeply lobed rotate corolla; fruit subindehiscent. 601. **Limnanthemum.**

O^vary 2-celled; leaves cordate or hastate; petals connate in a campanulate corolla ; fruit a 2-4-seeded capsule . . . 626. **Ipomoea.**

Terrestrial herbs, shrubs, or trees, or if growing in or on Car Water, the

stems ^erect and the leaves not floating :—

climbing herbs or shrubs with spirally twisted tendrils :—[p. 48]

owers with no corona; style simple; petals connate at tips in a Cal^vPtra ; stamens opposite petals, the filaments free throughout; ^{le} simple ; leaves simple or compound. I⁸⁸, [^]tlis,

owers with corona outside stamens; styles 3; petals free; semens alternate with petals, adnate below to gynophore; leaves

S^l*Ple, entire or lobed or partite. 357. **Passiflora.**

*Erect herbs, or shrubs, or trees, or if climbing raising themselves^s by voluble stems or by prickles; if by tendrils {*Helmut*, *Ancistro-claclus*, *Uncaria*, *Bauhinia* sometimes, and *Strychnos* sometime^s} then these simply hooked or subcircinate, but not spiral:—[p. 47 J

Leaves absent; yellowish parasitic twiners.....613. **Cuscut**^{a*}

Leaves present:—

fLeaves compound :—[p. 49]

{Leaves pinnately compound:—[p. 49]

Leaves simply pinnate or pinnately 3-foliolate :—

Leaves gland-dotted.....133. **Zanthoxylum**

Leaves not gland-dotted:—

Leaves odd-pinnate:—

Leaves opposite:—

Petals free.....190. **Turpinia**

Petals connate in a tube.....402. **SambucUS**

Leaves alternate:—

Seeds winged; ovary 5-celled.....166. **Cedrela**.

Seeds not winged :—

Ovary 2-celled, seeds arillate ...197. **HarpulHa***

Ovary 1-celled, seeds not arillate....210. **RhUS***

Leaves even-pinnate.....278. **Cassia***

Leaves twice or more than twice pinnate :—

Leaves evenly twice pinnate :—

Anthers gland-crested.....296. **Neptunia**.

Anthers not gland-crested.....298. **DesmanthUS***

Leaves unevenly twice or more than twice pinnate :—

Leaves opposite.....678. **Oroxylum***

Reaves alternate:—

Flowers not in umbels:—

Flowers in panicles; carpels 3, united in a 1-celled ovary.....213. **Moringa**.

Flowers in dense, simple racemes ; carpel solitary
285. **Acrocarpus**.

Flowers in umbels :—

ffCarpels 2 :—[p. 49]

JJPetals imbricate; flowers in compound umbels:—[p. 49]

§§Secondary ridges of the fruit inconspicuous :—[p. 49]

If IT Fruit constricted at commissure or laterally compressed; ridges of fruit slender :—
[p. 49]

Furrows of the fruit with solitary vittae

386. Carum.

Furrows of the fruit with 2-3 vittae

387. Pimpinella.

UITFruit widest at commissure, often dorsally compressed; ridges of fruit distinct, furrows with solitary vittae:—[p. 48]

Fruit oblong or subcylindric, not winged:—

Ridges of the fruit not thickened :—

Petals white. **389. Seseli.**

Petals yellow. **388. Foeniculum.**

Ridges of the fruit thick and corky; petals white. **390. (Enanthe.**

Fruit much compressed dorsally, the lateral ridges winged. **391. Peucedanum.**

§§Secondary ridges of fruit prominent:—[p. 48]

Fruit glabrous. **392. Coriandrum.**

Fruit setosely bristly. **393. Daucus.**

† {Petals valvate; umbels racemed or panicled:—
[p. 48]

Pedicels jointed ; albumen uniform

397. Panax.

Pedicels continuous ; albumen ruminated

395. Heteropanax.

ft Carpels 4-5; pedicels jointed; petals faintly im-

bricate $\wedge P_{-48} J$ **394. Aralia.**

$\{p. \wedge^{ves} \dots\}$ digitately compound ; flowers in panicled umbels:—

Carpels 5, styles free **398. Heptapleurum.**

† **Carpels 2** **396. Brassaiopsis.**

if $\bar{su}Z^8$ alternate \wedge^{in} *Inchodesma* alternate only above); or
Petals ; $\wedge_p \circ S \wedge <^{Sareot} P * TM a$) with stamens opposite the

perianth double .--fr. **59]**

*Petals $\wedge_a S \setminus f ? e$ or $\wedge^{Te \wedge Ular} J^r$ connate, rarely (*Holigarna*,
am. rix), $\wedge_{amt} J^r$ united at the vertex; the stamens

never adnate to the petals :—[p. 52]

***Petals valvate or open in bud :—[p. 50]

††Style simple :—[p. 50]

iKLeaves palmately lobed ; ovary inferior; stamens alternate with petals [p. 50] **396. Brassaiopsis.**

{{{Leaves penninerved ; ovary superior :—[P* 49^J }
 Ovules 3 pendulous from tip of a centra
 placenta; stamens opposite edges, rarely ∇
 posite centre of irregularly united petals

169. **Ola***

Ovule solitary pendulous from apex of ce^{ll};
 stamens opposite free petals.....170. Op^{ia}

tttStyles two or more, free:—[p. 49]

Ovary superior; flowers in small cymes; leaves
 penninerved; aestivation open ...168. **Chailletia.**

Ovary inferior; flowers in umbels; leaves palm-
 ately-nerved.....384. **Hydrocotyle.**

**"Petals imbricate or contorted in bud:—[p. 49]

ttStamens alternate with petals :—[p. 52]

fStyles or stigmas 2 or more than two, free:—
 [P. 51]

Ovary inferior:—

Ovary 2-celled, styles 2 ; leaves with
 petiole dilated at the base; flowers in
 umbels :—

Umbels simple; leaves cordate or rotund
 384. **Hydrocotyle.**

Umbels compound ; leaves linear

385. **Bupleurum.**

Ovary 1-celled, styles 3; petiole not sheath-
 ing ; flowers racemose or paniced :—

Petals contorted ; lobes of calyx accrescent

85. **Ancistrocladus***

Petals truly imbricate; lobes of calyx not
 accrescent.....206. **Holigarna.**

Ovary superior or half-superior :—

}{Leaves conspicuous:—[p. 51]

{Ovary 1-celled :—[p. 51]

Seed large, solitary ...207. **Semecarpus***

Seeds few or many, small:—

Leaves beset with glandular hairs

316. **Drosera.**

Leaves not glandular:—

Sepals and petals dissimilar

356. **Turner a.**

Sepals and petals alike or nearly so

355. **Homalium.**

Ovary 2-5-celled :—[p. 50]

Sepals free ; ovary 3-5-celled :—

Styles and carpels 5121. **Linum.**

Styles and carpels 8-4

122. **Reinwardtia.**

Sepals more or less connate below; ovary

2-celled; styles 2181. **Kurrimia.**

J {Leaves minute and scale-like:—[p. 50]

73. **Tamarix.**

t Style solitary or styles united :—[p. 50]

Corolla irregular :—

Leaves equally 2-lobed; carpel solitary;
petals 5279. **Bauhinia.**

Leaves not 2-lobed; carpels more than
one:—

Ovary superior; leaves not sheathing:—

Anthers free ; ovary 1-celled

54. **Ionidium.**

Anthers connate ; ovary 5-celled

131. **Impatiens.**

Ovary inferior, 3-celled ; leaf-sheath large
and stem-clasping943. **Ravenala.**

Corolla regular:—

§§ Sepals and petals 5, rarely 4; leaves
penninerved, rarely palminerved, with
reticulate venation ; petiole not sheathing:—
[p. 52]

Ovary superior:—

Sepals valvate, free . . .118. **Triumfetta.**

Sepals imbricate, more or less connate
below:—

Ovary 3-5-celled; petals not accres-
cent :—

Flowers cymose; ovary at base
confluent with disk

180. **Gymnosporia.**

Flowers spicate, racemose, or pani-
culate ; ovary at base free from disk

179. **Gelastus.**

Ovary 1-celled; petals accrescent

204. **Swintonia.**

Ovary inferior:—

Sepals imbricate, shortly connate below^{l*} »
 ovary 1-celled and 1-ovuled

205. *Drimyca* P^{us}

Sepals valvate, united below^{us}
 considerable tube; ovules more
 one:—

Ovary 1-celled; ovules 2-5
Tumitzera

Ovary 4-5-celled; ovules very^{man} J^a

§§Sepals and petals, each 3; leaves parallel-
 nerved with stem-clasping leaf-sheath; ovary
 2-celled:—[p. 51] 979. *Floscopa*

ft Stamens opposite the petals:—[p. 50]

Sepals valvate:—

Ovary superior or half-superior:—

Fruit a dry or fleshy drupe with no^{na} ternij
 wing 184. *Zif* Y^{na}

Fruit a dry nut prolonged above in an oblong
 linear leathery wing 185. *Ventilago*

Ovary quite inferior, the fruit tipped by^{ill*}
 persistent calyx:—

Fruit 3-winged; flowers in paniculate fascic^{les}
 186. *Gouania*

Fruit terete, ovate; flowers subumbellate

187. *Helinus*

Sepals imbricate; ovary superior.....200. *Sab* i^{na}

••Petals united in a gamophyllous corolla; if free
 (*Embelia*) the stamens adnate to the petals:—[p. 49]

fOvary inferior or half-inferior:—[p. 53]

I Stamens not adnate to corolla:—[p. 53]

Leaves with large stem-clasping leaf-sheaths,
 venation parallel from a strong midrib; fruit^{uit}
 indehiscent 944. *Musa*»

Leaves without leaf-sheaths, venation reticulate;
 fruit dehiscent:—

Capsule loculicidal within the calyx-teeth:—

Corolla stellately 5-partite

508. *Cephalostigm**'

Corolla campanulate ...509. *Wahlenbei*?^*/

Capsule opening below the calyx-teeth

510. *Campanula*.

‡Stamens adnate to corolla-tube; leaves reticulate without leaf-sheath ; capsule circumscissile [p. 52]

507. **Sphenoclea.**

tO vary superior:—[p. 52]

Stamens opposite the petals or corolla-lobes : —

Styles 5 free; ovary 1-ovuled 512. **JEGialitis.**

Styles connate, or style simple:—

Stamens free from corolla-tube; ovary 1-ovuled ; style 5-armed above 513. **Plumbago.**

Stamens adnate to corolla - tube ; style simple:—

Ovary 1-locular with a free-central placenta; ovules 2 or more ; staminodes 0 :—

Fruit a capsule ; herbs:—

Capsule dehiscing by valves:—

Corolla-lobes imbricate

514. **Androsace.**

Corolla-lobes contorted

516*. **Lysimachia.**

Capsule circumscissile

516. **Centunculus.**

Fruit indehiscent or follicular; shrubs or trees:—

Calyx nearly enclosing the many-seeded berry 517. **Maesa.**

Calyx free from the one-seeded fruit:—

Petals free or only slightly connate at base, imbricate 518. **Embelia.**

Petals connate, lobes twisted to right:—

Fruit globose, quite indehiscent

519. **Ardisia.**

Fruit cylindric, curved, splitting along one side 520. **ASgiceras.**

Ovary 2- or more-celled; ovules in each cell one, adnate to inner angle; trees; stamens with 5 alternate staminodes:—

Leaves subopposite; albumen none; ovary glabrous 521. **Sarcosperma.**

Leaves quite alternate; seeds albuminous; ovary villous 522. **Sideroxylon.**

Stamens alternate with corolla-lobes, usually adnate to corolla:—

Styles distinct:—

Corolla-lobes 5, imbricate; stigmas to style simple, capitate:—

Fruit a drupe with 4 1-seeded pyrenes

609. **Coldenia**.

Fruit a capsule :—

Seeds very many.....603. **Hydrocotyle**.

Seeds few, 1-4.....616. **0***.

Corolla-limb subentire, plicate; stigmas to style 2, linear.....617. **EvolvU**.

Styles connate:—

Carpels 2 free, only the styles united :—

Fruit of 2 indehiscent fibrous and woody carpels.....545. **Cerber**.

Fruit of 2 follicles.....546. **Plumed**.

Carpels connate as well as the styles:—

Corolla with a ring of hairs or scales in throat:—

Throat of corolla with many hairs concealing the stamens; fruit a 2-locular drupe.....544. **Theve**.

Throat of corolla with 5 flat scales concealing the stamens; fruit of 4 nutlets attached to a carpophore:—

Nutlets with scar of attachment continued to their apices, produced downwards below the scar

611. **Cynoglossui***

Nutlets with scar of attachment extending to their apices, more or less produced upwards

610. **Bothriospermui***

Corolla-throat naked :—

Ovules numerous in each cell of 2-celled rarely spuriously 4-celled ovary:—

[p. 55]

Fruit an indehiscent berry:—[p. 55]

**Corolla rotate or wide-campanulate:—[p. 55]

Anthers longer than filaments, confluent in a cone, not dehiscent throughout their length :—[p. 55]

Anthers opening introrsely by longitudinal slits, their tips empty; leaves pinnatisect

634. **Lycopersicum.**

Anthers opening by apical pores or short apical slits; leaves entire, lobed or pinnatifid

035. **Solanum.**

^Anthers not longer than filaments and not connivent in a cone, dehiscent throughout their length by lateral slits :—[p. 54]

Calyx not enlarging materially in fruit 636. **Capsicum.**

Calyx enlarged in fruit so as to overtop the berry...fi!V7. PWyaa.Ua.

**Corolla urceolate; calyx enlarged in fruit and overtopping the berry [p. 54]

638. **Withania.**

ffFruit capsular; valves completely or partially separating :—[p. 54]

flowers axillary, solitary; corolla plicate; seeds somewhat compressed, embryo curved..... 639. **Datura.**

Flowers in terminal panicles; corolla induplicate-valvate; seeds hardly compressed; embryo straight

640. **Nicotiana.**

J{Ovules 2, less often 1, rarely 4 in each cell of the ovary:—[p. 54]

f Corolla-lobes imbricate or, if contorted (*Trichodesmu*), not plicate :—[p. 56]

Stamens very slightly adnate to base of corolla-tube; flowers polygamous; drupe with 2 or more 1-seeded stones

176. **Ilex.**

Stamens distinctly attached to tube or throat of corolla; hermaphrodite:—

Style twice 2-partite; drupe with one 4-1-seeded stone ...604. **Cordia.**

Style only once 2-partite or simple:—

Corolla-lobes imbricate; drupe with two 2-seeded or four 1-seeded stones:—

Styles depressed-conical at the apex or with a horizontal ring below or at the stigma:—

Style short, shortly 2-lobed; stones 2, each 2-seeded; shrubs usually more or ^{ss}scandent...605. **Tourneforti***
Style elongated, dilated »* the apex, stigma above the ring either 0, or elong^{te} lanceolate simple, or line&^r double; stones 4, each *² seeded; herbs

606. **Heliotropii**"*'

Styles elongated, not dilated or annular at the apex:—

Style simple ...607. **Rhabdia***

Style more or less 2-partite

608. **Ehretia**.

Corolla - lobes contorted; *leaves opposite below*; calyx enlarged in fruit; fruit of 4 nutlets

612. **Trichodesma**.

Corolla-limb plicate or induplicate:-- [P. 55] :

§Corolla-tube more or less uniformly enlarged from base to apex, the 5 bands on the lobes rarely clearly defined from the intervening spaces; pollen not spinescent:—[p. 58]

Fruit indehiscent, woody or fleshy, rather large; style short or none; stigma 5-10-rayed; corolla - lobes ^{2, fid}.....614. **Erycibe**.

Fruit dehiscent, or if not dehiscent (*Parana* sometimes), then small and with thin, fragile walls:—

Flowers in racemes or panicles; ovary 1-locular 2-ovuled, rarely 4-

ovuled and 1-2-locular; capsule 1-seeded indehiscent or rarely 2-valved; outer 3 or all the sepals enlarged in fruit; style entire or shortly 2-lobed 615. **Porana.** Flowers in cymes or solitary; capsule valvate or opercular, rarely dehiscing irregularly:—

Styles 2, united below; sepals hardly enlarged in fruit; cymes subcapitate; capsule dehiscing irregularly 618. **Bonamia.** Style entire, stigmas usually 2:—

Ovary 1-locular; capsule 4-valved, 4 - seeded ; stigmas short, oblong; calyx-lobes not enlarged :—

Bract enveloping the calyx ;
pollen spherical

619. **Calystegia.**

Bract not enveloping the
calyx; pollen polyhedral

620. **Hewittia.**

Ovary 2-locular, or sometimes
4-locular:—

Outer 3 sepals much
larger than the 2 inner and
decurrent on the peduncle;
stigmas capitate

621. **Aniseia.**

Outer 3 sepals not larger
than the 2 inner nor decur-
rent on the peduncle:—

* Stigmas elongated :—

[p. 58]

t Stigmas filiform; ovary
2-locular, 4-ovuled, cap-
sule 4-valved or inde-
hiscent ; hairs simple or
rarely 2-branched [p. 58]

622. **Convolvulus.**

fStigmas elliptic, short or long; ovary 2-locular, 4-ovuled; capsule 8-valved; hairs ³~ many-branched [p. 56]

623. **Jacquemontia***

•Stigmas globose:—[P.⁵^ Capsule 4-valved; ovary 2-locular or often ⁴* locular; fruiting sepals not enlarged; bands of corolla usually with 5 purple lines; stem not winged

624. **Merremia***

Capsule with circumscissile dehiscence; ovary 2-locular; fruiting sepals considerably enlarged; bands ^o* corolla without lines; stem winged

625. **Operculinfl''**

§Corolla-tube not uniformly enlarged from base to apex, the 5 bands on the lobes clearly defined by 2 prominent lines; pollen spinescent:—[p. 56]

*'Fruit dehiscent, or if indehiscent then with thin, fragile walls:— [P. 59]

Stamens arising from the backs of 5 scales attached to the corolla-tube; flowers small urceolate, fasciculate; fruit 4-valved

629. **Lepistemon***

Stamens arising directly from the corolla-tube:—

t JCorolla more or less campanulate; calyx-lobes never aristate; inflorescence never scorpioid; stamens not exserted [p. 59]

626. **Ipomcea.**

{ {Corolla more or less hypocra-
teriform ; calyx-lobes aristate or
if obtuse the inflorescence scor-
pioid; stamens exerted:—[p. 58]

Flowers rather small, pink,
slightly irregular

627. **Quamoclit.**

Flowers large, white or purple,
never pink, quite regular

628. **Calonyction.**

**Fruit indehiscent, woody or mealy
or fleshy :—[p. 58]

Fruit woody ; stigmas elliptic-
oblong ; corolla hypocrameriform

630. **Rivea.**

Fruit mealy or fleshy; stigmas
globose; corolla not, or very
rarely, hypocrameriform:—

Sepals large, orbicular, accres-
cent, mucilaginous, ultimately
completely enveloping the fruit

631. **Stictocardia.**

Sepals small, ovate, or narrow-
oblong, leathery, ultimately dry,
not enlarging so as to envelop
the fruit:—

Ovary 4-celled

632. **Argyreia.**

Ovary 2-celled

633. **Lettsomia.**

II Perianth single :—[p. 49]

Leaves with parallel nervation and a large stem-clasping
leaf-sheath ; perianth represented by 2 lodicules

1124. **Melocanna.**

Leaves with reticulate nervation, leaf-sheath absent or
minute:—

ffLeaves with stipules:—[p. 60J

Stipules transformed into prickles ...184. **Zizyphus.**

Stipules membranous or herbaceous :—

***Stipules connate *on* both sides in an ochrea
clasping the stem. within the *petiole oi* its leaf

[p. 60J.....787. **Polygonum.**

***Stipules lateral, free:—[p. 59]

Fruit a small drupe with hard endocarp

854. ~~Tree~~

Fruit a dry nut, expanded into a flat obovate^s or orbicular reticulate wing :—

Leaves serrate; cotyledons flat

851. ~~Ulmus~~

Leaves entire; cotyledons folded

852. ~~Holoptelea~~

ffLeaves without any stipules:—[p. 59]

Perianth-lobes valvate.....172. ~~Canajera~~

Perianth-lobes imbricate :—

Stems twining; perianth-lobes connate below

785. ~~Basella~~

Stems erect :—

Perianth-lobes membranous or herbaceous :—

Perianth-lobes connate below:—

Leaves fleshy, linear, terete or flattish; embryo spiral.....778. ~~Suaeda~~

Leaves herbaceous, flat; embryo annular

780. ~~Beta~~

Perianth-lobes free ;—

Flowers all similar.....779, ~~Chenopodium~~

Flowers polygamous.....782. ~~Atriplex~~*

Perianth-lobes scarious, free; flowers 3-nate, the outer pair reduced to crested scales

769. ~~Digera~~

^{fit} Leaves opposite (m ~~Trkhouemia~~ alternate above) or whorled:—[p. 49]

t {Perianth single, petals absent :—[p. 61]

Sepals free, imbricate; styles 3 or more •-

S a t i.....●●●●*●●*»**

~~Alonja~~.....383. ~~Mollugo~~

Lobes of calyx imbricate above.....382. ~~Trianthema~~

Lobes of calyx or perianth valvate •-

Wbes of period with a tuft of ^^ m their

i n t a m : oVae3 fW 2,3 On . *» . tol

Lohp« Af'""i.....81o- ~~Santalum~~

many on axial placentas:~ ^ ? * * on the face, ovules very

Herbs; calyx membranous 342. **Ammannia.**

Trees with firm calyx; flowers polygamous
346. **Crypteronia.**

{ {Perianth double, petals present:—[p. 60]

Petals free :—

Sepals free :-

Ovary 2-or more-celled 71*, 72* & .

Ovary 1-celled: -

Styles free :—

'Stipules absent <*• **Beltana.**

Stipules present, scarious 67. **Sperguia.**

Styles combined :-

Sepals not keeled : -

Leaves ovate-cordate ; stipules inconspicuous
68. **Drymana.**

Leaves linear; stipules scarious
70. **Polycarpsea.**

Sepals keeled; leaves linear or spatulate;
stipules scarious 69. **Polycarpon.**

Sepals connate below :—

Calyx-tube very short; ovary superior :—

Fruit a drupe; seeds without arillus :—

Calyx-lobes small, valvate 203*. **Bouea.**

Calyx-lobes large, imbricate, orbicular
177. **Elseodendron.**

Fruit a dehiscent capsule ; seeds arillate ; calyx-lobes large, imbricate, orbicular
fo 178. **Lophopetalum.**

Calyx-tube longer than the acute valvular lobes;
ovary inferior or enclosed in the calyx^tube

Q / , • i 342. **Ammannia.**

Style Bimphlo ».. . . . 313. **Vah** ^

Styles two, free • ' f

Petals united in a gaxnophyllous corolla or if free
(*Loranthus* sometimes) the stamens epipetalous :

ft Ovary inferior : [p. 65]

Stamens alterate with **L o r a n t h U 9 <**
p ^ **umca.**

Stipules present interpetiolar or if 0 (* *) <-

*?££ -nyt; If few, at least more than one
in each cell:— [p. 63]

Fruit dry, dehiscent, or if indehiscent ^{sepa-}
 rating into 2 several-seeded cocci:— [p- [^] ^{co} ^{ro} [^] ^d [:] ^{^-} [^] ^{bo} [^] ^{bud};
 Flowers in dense globular heads; [^] ^{co} ^{ro} [^] ^d [:] ^{^-} [^] ^{bo} [^] ^{bud};
 funnel-shaped; stigma simple, far-exserte
 Ovaries confluent; fruits forming a ^{gl} ^{^-} ^{bo} [^] ^{bud};
 solid mass; corolla-lobes imbricate m
 heads not bracteate ; trees

403. **Anthocephalus.**

Ovaries free or nearly so; fruits ^{quite} [^]
 separate, capsular ; corolla-lobes valva ^t ^e
 bud:— ^{us}

Flowers intermixed with paleaceo
 bracteoles; trees :— ^{or}

Calyx-limb 5-toothed ; heads with
 without bracts..... 404. **Adinae**

Calyx-limb entire; heads with 2 wi
 bracts..... 405. **Stephegyn^c;**

Flowers not mixed with bracteoles.
 climbers with hooked peduncles

406. **Uncaria**

Flowers axillary, solitary or fascicled, or *ir*
 axillary or terminal cymes, racemes. ^o
 panicles, never in dense globose heads;

Corolla-lobes twisted in bud ; fruit ^{capsular,} ^{winged};
 2-celled; seeds angular, but not
 flowers in panicles ; trees or shrubs

407. **Wendlandia.**

Corolla-lobes Valvate in bud :—

Trees; flowers with leafy bracts, ⁱⁿ
 paniced spikes ; fruits capsular, 2-celled ;
 seeds winged. . . . 408. **Hymenodictyon.**

Herbs ; flowers solitary or fascicled, axil-
 lary, or in axillary or terminal cymes : —*

Fruit oblong, subglobose, or orbicu-
 lar :—

Corolla-lobes 2-3-toothed; stipules
 entire..... 409. **Dentella.**

Corolla-lobes quite entire; stipules
 bristly..... 411. **Oldenlandia***

Fruit broadly didymously obcordate
 with 2 compressed spreading lobes

413. **Ophiorrhiza.**

Ifruit fleshy or leathery, a berry, or drupe-like with 2 or more many-seeded pyrenes; seeds not winged; shrubs or trees:—[p. 62]

Corolla valvate; seeds many, small, angled:—

Inflorescence lax; fruit a berry:—

Inflorescence terminal; one calyx-lobe usually leaf-like 414. **Mussaenda.**

Inflorescence axillary; calyx equally 4-5-lobed 415. **Adenosacme.**

Inflorescence subcapitate; calyx with 5 rigid lobes; fruit a drupe with 2 many-seeded pyrenes 416. **Myrioneuron.**

Corolla imbricate or contorted:—

Stamens inserted at base of corolla-tube; lobes of corolla imbricate; seeds small, cotyledons minute; inflorescence terminal

417. **Hamelia.**

Stamens inserted at or near mouth or corolla-tube; lobes of corolla contorted; seeds large, cotyledons often leafy; inflorescence axillary:—

Ovary 1-celled; seeds many; stigma fusiform 418. **Gardenia.**

Ovary 2-celled:—

Stigma fusiform:—

Seeds many 419. **Randia.**

Seeds few 423. **Webera.**

Style-arms two; seeds few:—

Flowers sessile; anthers hirsute, subincluded 421. **Hyptianthera.**

Flowers usually pedicelled; anthers glabrous, exserted

422. **Diplospora.**

**Ovules solitary in each cell:—[p. 61]

tCorolla-lobes contorted in bud; stipules interpetiolar solitary; shrubs or small trees:—

[P- 64]

‡‡Flowers in large corymbs; stigma fusiform exserted:—[p. 64]

•Style short, pubescent; stigma stout $\bar{L}p. \hat{t}^{\wedge}4$
423. **Webera § Pseudixora.**

•Style long, glabrous; stigma slender.—

[p. 63]

Bracts membranous, the lower sheathing;
424. **Pipturus**—

Bracts coriaceous, not sheathing

425. **Ipomoea**—

{Flowers axillary, solitary or fascicled;
style-arms 2, linear [p. 63].... 426. **Coffea**.

Corolla-lobes valvate in bud:—[p. 63]

Shrubs or small trees, usually erect;

stipulate:—

Flowers in dense heads; calyces com-
fruits forming a globose or oblong
mass; erect shrubs or small trees

427. **Morinda**.

Flowers free:—

Erect shrubs or small trees:—

Fruit drupaceous; styles not papil-
lose:—

Style stout; stigma large; ovules
pendulous; radicle superior; fl-
axillary, fascicled:—

Ovary 2-celled ...428. **Canthium**—

Ovary 3-5-celled 429. **Yangueria**—

Style slender, stigma divided; ovules
erect; radicle inferior:—•

Flowers in terminal cymes; calyx
limb shortly 4-5-toothed; style-
arms 2..... 430. **Psychotria**—

Flowers in axillary fascicles;
calyx-tube deeply 3-6-fid; style-
arms 3-9..... 431. **Lasianthus**.

Fruit capsular; capsule 5-valved at
apex; style 5-fid, papillose; flowers
densely paniced ...432. **Hamiltonia***

Twining foetid shrubs; styles 2, capillary*
twisted, papillose; fruit of 2 dorsally
compressed, 1-seeded pyrenes; flowers
paniced..... 433. **Pseuderia***

Herbs; leaves whorled with stipules replaced
by leaves; fruit of 2 coriaceous or fleshy
indehiscent lobes..... 437. **Rubia***

t tOvary superior :—[p. 61]

Stamens opposite corolla-lobes :—

Herbs ; placentas free-central; ovules numerous

515. **Anagallis.**

Trees; placentas axial; ovules solitary in each
loculus of ovary.....521. **Sarcosperma.**

Stamens alternate with corolla-lobes; placentas
parietal or axial, never free-central:—

'Carpels free and only the styles united (if carpels
united in flower the fruit of two free follicles);
style more or less enlarged near the top with its
stigmatic surface below the tip; fruit of 2,
rarely 1, free follicles, rarely of 2 drupes:—
[P. 68]

f Pollen aggregated in solitary or paired masses
(pollinia) in each anther-cell; apex of style
dilated into a plane or beaked disk with a
stigmatic border bearing 5 glands (corpuscles),
to which the pollinia are attached in pairs or
fours; fruit of 2 free follicles:—[p. 66]

Corona of 5 short, thick scales adnate to the
corolla and separate from the filaments; seeds
with a coma :—

Corolla large, funnel-shaped, the lobes
overlapping564. **Cryptostegia.**

Corolla small, rotate:—

Lobes of corolla overlapping

565. **Cryptolepis.**

Lobes of corolla valvate

566. **Hemidesmus.**

Corona of 5 filiform or subulate scales closely
adjacent or adnate to the filaments:—

Filaments with no interposed glands ; seeds
without coma567. **Finlaysonia.**

Filaments with interposed teeth or glands ;
seeds with a coma :—

Cymes short, sessile ; corolla-lobes short,
ovate; follicles smooth

568. **Streptocaulon.**

Cymes loosely panicked; corolla-lobes lan-
ceolate ; follicles with many longitudinal
membranous wings ...569. **Myriopteron.**

J"
^*
<M
^*
Z
t
nj
f

Pollen granular; stigma annular or ^{n t e} [^] ^{-fid} ^{ted}
 below the smooth, non-stigmatic entire o
 tip of the style :—[p. 65]

Anthers free from the stigma, a ^{W.J} ^{with} ^{-g in}
 eluded within corolla, the anther-cell,
 rounded bases:—

Calyx not glandular within :— ^{ds} [^]

Fruit indehiscent, drupaceous; see

without wings or coma :— ^r ^{JeSr}

Ripe carpels 1-seeded and more ^o ^{ring}
 united below; corolla-lobes o ^{verlap*} ^L
 to the left.....547. ^{K***O} ^{Tone}

Ripe carpels 1-2-seeded, ^{ixee,} ^{corolla-}
 carpel sometimes abortive;

lobes overlapping to the right ^{Kopsia.}
 548. ^{slender,}

Fruit dehiscent, of two free, ^{bes}
 several - seeded follicles; corolla-
 overlapping to the left:—

Ovules in each carpel 6 or nior ^{e i} ^{un-}
 only 2 rows; seeds subcylindric, w. ^{oslt0,}
 cate at both ends; leaves opp ^v ^{ca.}
stiynta plumose.....549- [»] th

Ovules very many in several rows ⁱⁿ
 each carpel; seeds ciliate at bo th
 ends; leaves whorled

550. *Alston*^{1*}

Calyx glandular within; fruit follicular :-[^]
 Follicles few-seeded coriaceous, som ^u ^d
 times hardly dehiscent; seeds embedd [©] ^{la-}
 in pulp, without wings or coma; *covoi*
 lobes overlapping to the left

551. *Tabernsemontana-*

Follicles many-seeded, slender, woody [»]
 seeds not embedded in pulp, tipped ^{vit*} ¹
 a deciduous coma; corolla-lobes over ^{l'}
 lapping to the right ...552. *Holarrhen**

Anthers conniving in a cone round the top
 of the style and attached to it by a po ^{int}
 on the connective, the anther-cells produced
 downwards into a subulate empty sp ^{ul;}
 carpels rarely (*Vallaris*, *Parsonsia*) *conna** ^e

throughout in flower; fruit always of 2 free follicles ; seeds always with a coma at one or at both ends :—

Anthers more or less exserted; corolla rotate or salver-shaped; leaves opposite :—

Mouth of corolla with a ring of scales; corolla either rotate or salver-shaped, lobes overlapping to the left; carpels free except at the styles; erect shrubs or small trees.....553. **Wrightia.**

Mouth of corolla naked ; carpels connate or subconnate in flower; climbing shrubs:—

Corolla rotate, lobes overlapping to the right; connective thickened at the back

554. **Yallaris.**

Corolla salver-shaped, lobes subvalvate; connective not thickened

555. **Parsonsia.**

Anthers included ; corolla-lobes overlapping to the right:—

Mouth of corolla with a ring of scales ; corolla funnel-shaped :—

Erect shrubs; lobes of corolla not tailed ; follicles erect; leaves whorled

556. **Neriura.**

- Spreading or climbing shrubs; follicles spreading; leaves opposite :—

Lobes of corolla tailed

557. **Strophanthus.**

Lobes of corolla not tailed

558. **Roupellia.**

Mouth of corolla naked; leaves opposite :—

Corolla funnel-shaped, very large, 3-5 in. long; calyx with leafy segments

559. **Beaumontia.**

Corolla salver-shaped :—

IT Corolla very large, 2-3 in. wide, lobes sharply twisted to the left

[p. 68]. 560. **Chonemorpha.**

HCorolla medium or snianⁿ, 1 i^{*b}
wide or less:—[p. 67]

Lobes of medium corolla ne^{arjv}
straight; ovary completely oi^{ar}
tially hidden in the disk; ^{seeds}
beaked..... 561. Aga^{nosma}

Lobes of the small corolla ^{sha}
twisted to the left in bud; ^{j^}
beaked :—^s

Ovary hidden in the ^{cup.}
shaped disk; tips of coro
lobes not deflected ^{lla-}

Ovary free ^{562.} from the ^{5-lobed}
disk; tips of corolla-lobes ^{de-}
f l e e t e d ...563. ^{ic noc a p r a}

•Carpels permanently united, stigma termina^l •

[p. 65]

Throat of corolla with a ring of scales ; c^{oro} ^{llft.}
lobes contorted and twisted to the left:— ^{mb}

Corolla large with a wide campanulate li- ^{d'}
scales of the throat ciliate; ovary 1-cel^U ^{te,}
with parietal placentas; fruit an ova
echinate, 2-valved capsule

540. **Allamand***

Corolla medium hypocrateriform; ovftw
2-celled with axial placentas; fruit *
globose, smooth berry..... 542. **MelodinUS***

Throat of corolla naked :—

fFruit a large globose berry with .seeds
embedded in pulp; trees or erect ^{or}
climbing woody shrubs :— [p. 69]

| Corolla-lobes contorted :—[p. 69]

Corolla-lobes twisted to the left; ovary.
1-celled with many parietal ovules*
corolla hypocrateriform

541. **Willughbeia-**

Corolla-lobes twisted to the right; ovary
more or less completely 2-celled :—

* "Corolla hypocrateriform ; ovules
rarely more than 4; seeds usually - >
armed shrubs [p. 67] ...543. **Carissa.**

Corolla long, tubular; ovules and seeds very numerous; unarmed trees, shrubs, or climbers often epiphytic [p. 68].....594. **Fagraea.

\ Corolla-lobes valvate ; leaves usually 3-5-nerved; trees, or shrubs climbing with short, hooked tendrils [p. 68]

595. **Strychnos.**

t Fruit a capsule, or if indehiscent small and of separating nutlets, or a dry or nearly dry drupe:—[p. 68]

Fruit a capsule ; herbs :—

Corolla-lobes valvate, capsule 2-valved

591. **Mitreola.**

Corolla-lobes contorted : — -

Capsule septicidally 2-valved:—

Ovary and capsule completely 2-celled.....596. **Exacum.**

Ovary and capsule 1-celled or imperfectly 2-celled

597. **Erythraea.**

Capsule 3-valved.....602. **Phlox.**

Fruit indehiscent, dry, or nearly so; or of separating nutlets:—

Corolla-lobes contorted, leaves opposite only below ; fruit of 4 dry nutlets ; herbs

612. **Trichodesma.**

* Corolla-lobes imbricate; fruit a small drupe:—

Cymes paniced; drupe included in a bladderly calyx; large trees

725. **Tectona.**

Cymes capitate, with large involucre bracts; large climbers

733. **Sphenodesma.**

Class VI. HEXANDRIA.

- Leaves 0 ; parasitic twining herbs.....802. **Cassy**^{tha-}
 Leaves present, or if no proper leaves (*Asparagus*), then their place ^{taken}
 by slender leaf-like modified branches (cladodes):— ^{larg^{ej}}
 Flowers in simple or branched spikes (spadices) subtended by ^{es of}
 much modified bracts (spathes):—
 Perianth-segments conspicuous, rigid, in two dissimilar sen ^{flowed}
 3 e a c h : ~
 Leaves pinnatisect, segments with flabellate nerves,
 polygamous (usually monoecious); medium palms ^{des}
 987. **Waffle**
 Leaves orbicular, flabelliform, plicate, lobes with induplicate si
 and parallel nerves ; flowers all 2-sexual:—
 Stigma in fruit basal; lofty palms.....082. **CoryP** [^]
 Stigma in fruit terminal; small palms.....083. **LicU**
 Perianth-segments small, herbaceous, 6 similar :— ^{sta-}
 Erect prickly herbs of wet places.....1012. **Khos**
 Scandent unarmed epiphytes.....1011. *o by
 Flowers variously arranged, but if in spikes these not subtended
 spathes :-••
 *Leaves compound, with 3 or more leaflets :—[p. 71] **Gynandropsis**.
 Leaves digitately 5-7-foliolate.....51.
 Leaves pinnate :— ^{luled}
 Leaflets 3, gland-dotted, a lateral pair with a shortly petio
 terminal leaflet.....140. **Triph** ^{a9ia,,}
 Leaflets more than 3, not gland-dotted :—
 Leaves odd-pinnate :— ^{tn}
 Style simple ; ovary 5-celled; fruit a 5-valved capsule wr ^{ia-}
 many winged seeds.....166. **Cedre**
 Style 3 ; ovary 1-celled ; fruit a dry drupe with a ft ^{1,21}
 1-seeded stone.....210. **Rh** ^{uS§}
 Leaves even-pinnate:—
 Seeds without an arillus :—
 Cocci of fruit at first united, ultimately spontaneously
 separating.....192. **Sapindu** ^{si}
 Cocci of fruit deeply divided to nearly their base **Aphanis**
 spontaneously separating.....194.
 Seeds arillate:—
 IFfruit not deeply lobed, usually more than 1 ^{cell}
 developed [p. 71].....195. **Schleicherft***

- If Fruit sulcately lobed, usually only 1 coccus developed [p. 70].....196. **Nepheum.**
- "Leaves simple, or if compound only 1-foliolate, or if absent replaced functionally by cladodes:—[p. 70]
- t Venation of leaves reticulate :—[p. 73]
- † Stamens adnate to the corolla :—[p. 72]
- Ovary inferior :—
 - Leaves radical, 3-partite; perianth 2-seriately G-lobed; stamens opposite corolla-lobes; ovary 1-celled; ovules many on 3 parietal placentas.....⁹⁵⁷ **Tacca**
 - Leaves opposite:—
 - Stamens opposite the petals or corolla-lobes; ovary 1-celled, 1-ovuled.....⁸⁰⁸ **Loranthus.**
 - Stamens alternate with the petals or corolla-lobes :—
 - Leaves without stipules; ovary 5-6-celled, ovules many on axial placentas.....506. **Campanumoea.**
 - Leaves with interfoliar stipules:—
 - Lobes of corolla valvate :—
 - Ovules several in each loculus of ovary
415. **Adenosacme.**
 - Ovules solitary in each loculus of ovary :—
 - Flowers in dense heads with confluent calyces
427. **Morinda.**
 - Flowers free:—
 - Style stout, stigma large; ovules pendulous; flowers in axillary fascicles...429. **Yanguena.**
 - Style slender, stigma divided; ovules erect;
 - Flowers in terminal cymes; calyx-limb shortly 4-5-toothed ; style-arms 2
430. **Psychotna.**
 - Flowers in axillary fascicles; calyx-tube deeply 3-6-fid ; style-arms 3-9
431. **Lasianthus.**
 - Lobes of corolla contorted; ovules several in each loculus of ovary.....418. **Gardenia.**
 - Ovary superior:—
 - §Leaves opposite ; stamens alternate with petals or corolla-lobes:—[p. 72]
 - Cymes paniced; drupe included in the** ^{^ f ^ J J ^} **lofty trees**⁷² **+**
 - Cymes capitate, 3-9-flowered, with large ^{i " TM 1 TM} bracts; large climbers.....732. **Symphorema.**

^Leaves alternate :—[p. 71]

Stamens opposite petals or corolla-lobes:—

Corolla-lobes as many as calyx-segments

523. **Achr^{ts}***

Corolla-lobes three times as many as calyx-segments

526. **Mimusop***

Stamens alternate with petals or corolla-lobes :—

Style twice 2-partite; ovary 4-celled, each cell ^{1 ovule} 604. **Cor[^]***

Style simple, stigma undivided; ovary 2-celled; each cell many-ovuled; fruit a many-seeded fleshy berry:—

Anthers opening introrsely by longitudinal their tips empty; leaves pinnatisect

634. **Lycopersic^{ical}***

Anthers opening by apical pores or short apical slits; leaves entire, lobed or pinnatifid

635. **Solan^{the}***

tStamens, even when corolla present, not adnate to petals :~[p. 71]

Perianth-segments of 6 sepals and 6 petals all free; stem ^{erect} hypogynous; armed shrubs with leaves fascicled in the ^{axils} of 3-5-partite spines..... 32. **Berber^{is}***

Perianth-segments fewer than 12; unarmed herbs, shrubs, trees:—

Leaves opposite :—

- Sepals free; styles 3; stamens arising from thalamus

66. **Stellar^{is}***

Sepals connate in a calyx-tube; style simple; ^{stamens} arising from calyx :—

Calyx-lobes imbricate; leaves strongly 3-nerved from base..... 340. **Sone^T^***

Calyx-lobes valvate; leaves penninerved

342. **Ammannia-**

Leaves alternate :—

UPerianth double, of sepals and petals :—[p. 73]

Sepals quite free:—

Sepals and petals 4; petals without scales at the base; herbs..... 50. **Cleome-**

Sepals and petals 5; petals with short woolly incurved basal scales; trees..... 194. **Aphani^{is}***

Sepals connate in a small gamophyllous calyx;—

Stamens alternate with petals:—

Leaves gland-dotted " «; **Atalantia.**

Leaves not gland-dotted 207. ***mecarpus.**

Stamens opposite petals.....355. **Homallium.**

fPerianth single, of sepals only; leaves stipulate.

[p. 72]

Stipules lateral, free; trees.....852. **Holoptelea.**

Stipules ochreate ; herbs:—

Stigmas capitellate.....787. **Polygonum.**

Stigmas fimbriate.....788. **Rumex.**

tVenation of leaves parallel:—[p. 71]

§§Ovary inferior:—[p. 74]

Flowers more or less sunk in the rachis, all the flowers of the
inarescence conduit with the accrescent rachis ana Dia
in a fleshy cone-like fruit.....945. An&n&o*

Flowers all free :—

Ovary 1-celled ; ovules many:—

Outer perianth-segments calycine, inner petaloid
placentas intruded so that the ovarian chamber
almost C-celled; submerged aquatic herbs ^ **Ottelia.**

Outer perianth-segments firm like the inner, both sub-
herbaceous or lurid; placentas S parietal; leaves radical,
flowers in involucrate umbels on leafless scapes ^ ^ ^
95 .

Ovary 3-celled; outer perianth-segments white, pink, or
yellow, petaloid like the inner:- . n i n , t e r e d o n a

Leaves large, thick, and fleshy, densely dn * i e d o
rootstock or a short simple stem, spiny at tip ^
armed along the edge; scape long, terminal, simple
branching towards apex:—

InflorLnce simple spicate, or compound **thyrsoid ;**
filiform or
stamens longer than perianth; ^ T M " } 50. **Agave.**
flattened at the base; style filiform shorter than

InflorLnce laxly paniculate; stamens **style thickened**
perianth; filaments thickened at base; **951. Furcraea.**
in the middle " f l e s D V u n -

Leaves thin and flat or, if somewhat fleshy,
armed :—

Rootstock tuberous; leaves strongly ^ n e r v e
plicate; flowers spicate or racemose, veiy
umbellate ; perianth yellow :—[p- 74]

[Artificial Guide

Fruit opening at top as a circumscissile or 3-valved
 capsule; ovary not produced above the ^{cr*}
 stipe supporting the perianth 95 ² Hypoxig.
 Fruit indehiscent; often the ovary produce ^d
 stipe between the crown and the base of the pe ^{rian}
 lobes 953, CUF ^{t 3 y}

† Rootstock a tunicated bulb; leaves not e. * apex
 nerved, flat, smooth, thinly fleshy; flowers at t n ^,
 of a scape usually umbellate, occasionally so
 perianth white or pink:—[p. 73]

Scapes 1-flowered 954. Zephyranthes.
 Scapes umbellate ^3. Crinum.

§§ Ovary superior:—[p. 73]

• Flowers arranged in spikelets with imbricating glumes, ^a ^g
 1-locular and ovule solitary; leaves with stem-clasping ^{se} ^g
 and a ligule at the junction of leaf-sheath and blade; p. ^{fr} [^]
 if present reduced to a 2-nerved palea and 2 lodicules ⁱ
 a grain with seed-coats adherent to the pericarp '—[P- ⁵ ^J ^{no}

Herbaceous grasses; blades never transversely veined
 articulate on the leaf-sheaths :—

Glumes I and II minute or setaceous; III &&& I.
 chartaceous 1058. Oryza.

Glumes I and II absent; III and IV membranous '—
 Glumes broad, the outmost not awned

1059. Leersia-

Glumes narrow, the outmost awned

1060. Hygrorhiza-

Shrubby or tree-like grasses;- blades transversely veined
 and articulate on the leaf-sheaths:—

Pericarp thin and membranous 1110. Bambusa «
 Pericarp fleshy or crustaceous :-^

† Palea 2-keeled:—[p. 75]

Spikelets 2-more-towered, only one flower usually
 fertile; generally spikelets capitate on the branches
 of the panicle:—

Ovary hirsute at top; pericarp crustaceous

1119. Dendrocalamus.

Ovary glabrous at top ; pericarp fleshy

1120. Melocalamus.

Spikelets 1-flowered:—

If Spikelets loosely spicate on the branches of the
 panicle [j. 75]. H21. TeinoBtachyum.

IFspikelets crowded in globose heads [p. 74]

1122. **Cephalostachyura.**

fPaleta 0, or, if present, glume-like :—[p. 74]

Spikelets very minute; fruit small... 1123. **Dinochloa.**

Spikelets conspicuous; fruit very large

1124. **Melocanna.**

*Flowers not enclosed in imbricating glumes; ovary rarely 1-locular and never 1-ovuled; leaves without a ligule; perianth always present, and either calycine or petaloid or both ; fruit never a grain :—[p. 74]

Carpels free :—

Flowers in spikes ; perianth-segments petaloid, 1-seriate, irregular in shape and 1-3 in number; fruit of 3 follicles

1019. **Aponogeton.**

Flowers in umbellate or paniced whorls; perianth-segments regular 2-seriate, 3 outer herbaceous, 3 inner petaloid; fruit of (i or more achenes :—

Flowers all 2-sexual.....1015. **Alisma.**

Flowers polygamous.....101(5). **Limnophyton.**

Carpels connate in a 3-celled, rarely 2-celled ovary :—

Perianth 2-seriate, the 3 outer segments calycine, the 3 inner petaloid :—

Petals connate below in a tube.....977. **Cyanotis.**

Petals free:—

Capsule 3-locular..... 878. **Forrestia.**

Capsule 2-locular.....979. **Floscopa.**

Perianth of 6 1-seriate segments, or if in 2 series of 3 each the S2gments of both series similar :—

Perianth-segments small calycine:—

Fruit a 3-valved capsule ; grassy herbs with slender linear or terete leaves.....981. **June us.**

Fruit indehiscent; climbing shrubs with flattened leaves ending in a tendril.....980. **Flagellaria.**

Perianth-segments all petaloid :—

iPerianth-segments connate below in a distinct tube;

. stamens adnate to the corolla:— [p. 76]

* 'Perianth - tube narrow, campanulate, lobes narrow, as long as the tube; fruit indehiscent; stout herbs or shrubs; flowers spicate;—[p. 76]

ffPericarp membranous, deliquescent; seeds ripening outside the pericarp; each cell of ovary 1-ovuled [p. 76].....947. **Sanseviena.**

f fPericarp persistent, firmly coriaceous:—[P. 75]
Each cell of the ovary 1-ovuled

962. **Dracaena.**

Each cell of the ovary many-ovuled

9C3. **Cord. line.**

**Perianth-tube wide, funnel-shaped, lobes broad,
longer than the tube; fruit a loculicidal capsule,
delicate leafy herbs; flowers paniced [p. 75]

972. **Hemerocallis***

}Perianth-segments quite free or only faintly unite
at the very base :—[p. 75]

§Terrestrial herbs or shrubs; inflorescence varied
axillary or terminal, but never in a one-lea e
scape:—[p. 77]

Shrubs with perennial epigteal stems; leaves
main branches with many clustered leaw¹
cladodes, fruit a berry. . . . 96O. **Asparagush**

Herbs with annual stems or scapes rising fro
perennial rootstocks, corms, or bulbs, rarely
(*Asphodelus*) wholly annual:—

If Underground perennial stem large in p^{10*}
portion to the roots :—[p. 77]

Perennial stem a creeping rootstock'»
annual aerial stem erect, leafy; leaves
broad; fruit a berry. . . . 904. **Disporum***

Perennial stem compact, not creeping ">
fruit a loculicidal capsule:—

Aerial annual stem climbing, leafy!
leaves broad with tendril-like tips;
perianth large, showy; rootstock tuber-
like, irregular, naked. . . . 9G5. **Gloriosa.**

Aerial annual stems or scapes erect;
leaves narrow; rootstock a globose
coated corm or bulb:—

Perennial stem a solid corm with
brown sheaths; annual stem leafy with
scattered linear or ensiform leaves;
flowers solitary or corymbose

966. **Iphigenia.**

Perennial stem a tunicated bulb;
annual scape simple, naked; leaves
radical:—

Flowers racemose on the scape, not surrounded by an involucre of bracts:—

Seeds subglobose; perianth segments spreading stellately

967. **Scilla.**

Seeds flattened ; perianth segments ascending campanulately

968. **Urginea.**

Flowers umbellate or capitate at the top of the scape, at first enclosed in a spathe-like involucre of membranous bracts.....969. **Allium.**

^f Underground perennial stem very small or (*Asphodelus*) sometimes none; root-fibres large, numerous, usually some or all fleshy or tuberous; leaves radical; fruit a loculicidal capsule:— [p. 76]

Each cell of the ovary 2-ovuled; capsule 3-quetrous; leaves semi-terete; plant annual.....970. **Asphodelus.**

Each cell of the ovary 4-more-ovuled ; capsule deeply 3-lobed, the lobes flattened; leaves flat.....971. **Ghlorophytum.**

§Aquatic, erect, or floating herbs; inflorescence racemose or spicate, terminating a 1-leafed scape Cp. 76].....973. **Monochoria.**

Class VII. HEPTANDRIA.

*Leaves compound, even-pinnate :— [p. 78]

†Sepals free * ovary syncarpous ; fruit composed of 1 or more cocci :— [p. 78]

without an arillus

194. **Aphania.**

ill. orillate:—

Fr^{uit} not de«ply lobed, usually more than 1 cell developed

195. **Schleichera.**

Fruit sulcately lobed, usually only 1 coccus developed

196. **Nephelium.**

- f Sepals connate in a short-tubed calyx; ovary of 1 carpei, fruit
- a pod :- [p. 77]
- Petals present**278. **Cassia.**
- Petals 0**282. **Saraca.**
- Leaves simple :- [p. 77]
- Leaves opposite :-
- Petals free or 0 ; small herbs60. **Stellaria.**
- Petals united in a gamophyllous corolla :-
- Leaves without stipules ; large climbers732. **Symplocos**^a.
- Leaves with interpetiolar stipules:-
- Flowers aggregated in heads ; corolla-lobes valvate427. **Morinda.**
- Flowers free ; corolla-lobes contorted419. **Gardenia.**
- Leaves alternate:-
- Leaves without leaf-sheath or ligule :-
- Perianth double, of sepals and petals:-
- Petals free:-
- Sepals not united; stamens arising below the ovary, ^ot
- opposite the petals, which have each a basal scale194. **Apocynum**^&'
- Sepals united in a gamophyllous calyx ; stamens a1 ^
- from calyx-tube opposite the petals355. **Holoptelea**^
- Petals connate in a gamophyllous corolla04. **Cordia**^
- Perianth single, of sepals only ; leaves stipulate :-
- Stipules connate in a stem-clasping ochrea ...787. **Polygala**^
- Stipules lateral, freeB52. **Holoptelea**^* e Jef.
- Leaves with large stem-clasping leaf-sheath and a ligule at junction of sheath and blade1124. **Melocactus**^na>

Class VIII. OCTANDRIA.

- Leaves compound :- [p. 79]
- fLeaves dotted with pellucid glands :- [p. 79]
- Style short, persistent130. **Glycosyllum**^P,
- Style articulate at top of ovary, deciduous :-
- Leaves odd-pinnate with all leaflets alternate ; unarmed137. **Clusia**^
- Leaves 3-foliolate or odd-pinnate with leaflets opposite except terminal; armed :-

11 * **141. Limonia.**

Calyx distinctly 4-5-lobed ; leaflets usually ^ ' ^ ^ leaflets

Calyx cupular, margin entire or obscure y , ^ , Luvunga.

always 3.....

Leaves not gland-dotted :—[P- 78]

Leaves odd-pinnate with leaflets opposite excep t the terminal, or

3-nate :—

Trees or shrubs; tendrils 0 :— #—

Leaves simply pinnate; flowers polygamous. mostly monceious

Ovary 1-celled (in this genus the flowers are..... ^ . odin*

or dioecious).....

Ovary 4-5-celled; flowers always polygamous ^ . s ^ ndial-

191. AUophylus.

Leaves digitately 3-foliolate..... ternate leaves, and

Herbs with slender climbing habit, with twice tendril 190. Cardiospermum.

tendrils.....

Leaves even-pinnate :—

Leaves simply pinnate; trees :—

gynocarpous ;

Leaflets 4 or more than 4; sepals free, ov»y

fruit of 1-3 indehiscent cocci :—

Seeds without an arillus :—

spontaneously

Cocci of fruit at first united, at iend ^ . Sapiindus.

separating..... *lv their base, but not

Cocci of fruit deeply divided to nearly

spontaneously separating :—

nous . gcaies of the

Cocci oblong; testa of seed membra 198 Erioglossum.

petals hooded and crested..... testa cartilaginous;

Cocci ellipsoid or sub-3-gonuus; ^ . Aphania.

scales of the petals not crested.....

Seeds arillate :—

Fruit not deeply lobed, usually in ore thall one cell ^ Schieichera.

developed..... occus developed

Fruit sulcately lobed, usually only one c ^ . Nephelium.

Leaflets 2 only, carpel solitary free, fruit a SU ^ de h ent pod H ^ dwickia.

IT

* . hvistlv and prickly

Leaves twice evenly or digitately pinnate , oi 300. mmos9r

Wbs.....

,L

simple ; "if compound," l-foliolate :-[P- 78]

1 J ^ ^ alternate :-[p. 81]

S0 v ary inferior ;-[p. 80]

+ M ^ atic herbs; ovules many axial in severa 'ro ws in each cell 351. Junsi8ea.

tp. 80].....

in 2 TM [p.] 8 h r a b s or trees: ovules solitary from apex of each

Flowers in paniced umbels; leaves stipulate

Flowers in axillary cymes sji pa 0 "401. Mar w.

§Ovary superior:—[p. 79]. Havers in braoteate whoris; <*P*

22? leave spaTM1161 Venation 0, T P 0 U S 1018. Batomopsi.. whorls :— aV6S reioHlate; owers fnever in bract C

"Perianth 2-seriate, of calyx and corolla :- [p. 81]

Mamens opposite the petals or lobes of corolla :-

ITf fre V ^ 1 " * * _ 5 353. Homali "" 1

Stamens nn.M in a gamophylloas corolla; style simple 526. Mimusop 8

alternat with or moie mmerous than petals o> corolla-lobes:—

Petals united in a gamophyllous corolla.. 604. Cordia. Pétals free:—

Small herbs, with glandular hairs; scvles 2-5, free. crowning a 1-celled ovary..... 316. Drosera.

Trees or shrubs, never with glandular hairs :—

Sepals quite free:—

Leaves scattered; ovary 1. ^ ^ more or le* stipitate; petals without scales :-

Sepals and petals 4 each, vegu1gr; stamens »» thalamus free from petals..... 52. CappW*

hZ als ami petals usually 5 each, irregular » ^me extent; onlv 2 stamfins ^ thiam0, wth C adnate to the petals

64. XanthophyUB "" 111

Leaves clustered in false whorls 3-pedaly 2-

petals with basal scales 194. Ap

Sepals connate in a gam

††Leaf dotted with pellucid glttnd3 ^ M] Style 'of, r 1 sten ; (eaves u A wh more than one f, r 1 sten) 136. Glycosmis.

Style articulate at top of ovary, deciduous :— Flowers polygamous ; stem unflJmed

135. Acronychia.

Flowers all hermaphrodite ; armed with spines :—

Anthers linear-oblong; disk elongate ^

143. **Paramignya.**

Anthers ovate-cordate; disk cup-shaped

144. **Atalantia.**

ttLeaf not gland-dotted:—[p. 80]

Fruit a kidney-shaped nut resting on the enlarged fleshy pyriform disk and peduncle; carpel solitary..... 208. **Anacardium.**

Fruit a small nearly dry drupe with a crustaceous or bony stone; carpels 5-6, only one developing 202. **Buchanama.**

**Perianth 1-seriate, petals absent:—[p. 80]

Perianth-segments free :—

Shrubs; stipules 0.....^{19B} - »<don*a.

Herbs ; stipules connate in a membranous ochrea

787. **Polygonum.**

Perianth-segments united:—

Ovary with many parietal ovules; fruit a capsule

354. **Caseana.**

Ovary with a solitary pendulous ovule; fruit indehiscent:—

Stipules 2, lateral; fruit with a flattened orbicular or obcordate wing.....^{852,} **Holoptelea.**

Stipules 0; fruit ovoid..... 804. **Wikstrcsima.**

¶Leaves opposite :- [p. 79]

Styles free:—

^Pals free; carpels connate in a 1-celled ovary; styles usually

³; Petals free, sometimes absent.....⁶⁶; **SteHana.**

Sepals connate in a tubular or inflated calyx; carpels 4, tree or ^{onl}y slightly united below; petals connate at base :—

Calyx shortly 4-fid.....^{314,} **Bryophyllum.**

Calyx deeply 4-partite.....^{315,} ^lanchoe,

S^leSl^ple or styles connate .—

Perianth 1-seriate (leaves sometimes partly alternate)

804. **WikBtrcemia.**

Perianth 2-seriate, of calyx and corolla :—

Petals connate in a gamophyllous corolla:—

Ovary superior; corolla-lobes imbricate; stipules 0

732. **Symphorema.**

Ovary inferior; corolla-lobes contorted; stipules *o^" petiolar..... 418. **Gardenia.**

Petals free:—

Leaves dotted with pellucid glands (subopposite only)

135. *A. nych* ^h

Leaves not gland-dotted, or if glandular the glands
pellucid :—

Sepals only 2, fewer than petals, large and much imbricate
herbs with fleshy stems and leaves. 71. *Portulaca* ^{lyx}

Sepals 4-5, as many as petals, rarely (*Memecylon*) &
truncate; trees, shrubs, or, if herbs, not fleshy :—

Leaves 3-nerved from the base; calyx-lobes slightly
imbricate. 338. *Osbeckia* ^h

Leaves penninerved :—

Calyx-tube truncate. 341. *Memecylon* ^{on}

Calyx-lobes distinct, valvate:—

Leaves stipulate; plants of mangrove swamps
319. *Rhizophora* *

Leaves without stipules; inland plants :—

Ovary 1-locular; climbing shrubs
327. *Combretum* B-

Ovary 2-more-locular:—

Herbs of wet places; petals small, flat
342. *Ammannia*.

Shrubs; petals larger, corrugated
345. *Lawsonia*.

Class IX. ENNEANDRIA.

Leaves none; parasitic twining herbs; anthers dehiscing by valves

802. *Cassytha* *

Leaves present, always simple:—

* Leaves alternate or all radical:—[p. 83]

fVenation of leaves parallel; leaves radical or mostly so; aquatic
more or less submerged herbs :—[p. 83]

Ovary inferior; carpels united :—

Leaves all long and narrow; fruit not winged. 888. *Bly* *^{a#}

Leaves, at least some, ovate, petioled; fruit winged

890. *Ottelia* *

Ovary superior; carpels apocarpous :—

Fruit of indehiscent achenes:—

Receptacle flat; flowers all hermaphrodite. 1015. *Alisma* ^{1*}

Receptacle globose; flowers polygamous ... 1017. *Sagittaria* *["]

Fruit of dehiscent follicles. 1018. *Butomopsis* *

ternation of leaves reticulate ; leaves never radical; terrestrial trees or shrubs : ^ [p. 82]

Leaves 2-lobed, more or less cleft at the tip, digitately nerved from the base.....279. **Bauhinia.**

Leaves not 2-lobed at tip; main-nerves pennate :—

Anthers opening by longitudinal slits :—

flowers 3-merous; sepals free, 3 ; petals 6, 2-seriate; carpels several, each 6-8-ovuled.....¹⁰ - **Sageraa.**

Flowers 5-merous; sepals connate below, 5; petals 5, 1-seriate ; carpel solitary, ovule 1.....²⁰⁸ - **Anacardium.**

Anthers dehiscing by upturned flap-like valves:—

Anthers all 2-celled :—

Perianth-tube persistent; enclosing the fruit; its lobes 6, subequal.....794. **Cryptocarya.**

Perianth-tube altogether deciduous :—

Perianth-lobes 5, subequal; pedicels unthickened in fruit; Bractinodes ovate or cordate; leaves both alternate and opposite.....795. **Beilschmiedia.**

Perianth-lobes 6, the three outer much the shorter; Pedicels much enlarged in fruit; staminodes minute or absent.....796. **Dehaasia.**

Anthers all 4-celled :—

Perianth in fruit with deciduous lobes but wholly or partly Persistent tube.....797. **Cinnamomum § Camphora.**

Perianth in fruit altogether persistent :—

Lobes of perianth reflexed in fruit.....798. **Machilus.**

*Leaves Lobes of perianth erect in fruit.....^{799i Phce 6i}

Anther opposite or subopposite :- [p. 82]

Anther dehiscing by upturned flap-like valves ; trees :—

others 2-celled ; leaves alternate as well as opposite.....795. **Beilschmiedia.**

- Anthers 4-celled ; leaves 3-nerved from base.....797. **Cinnamomum § Malabathrum.**

Anther not opening by valves :—

Anther connate in a corolla with contorted lobes; ovary inferior, 3-lobed; petals 3, imbricate; shrubs or small trees.....¹ **Stellana.**

Anther free, or occasionally absent; ovary superior; styles free. herbs.....66. **Stellana.**

Class X. DECANDRIA.

•Leaves compound:—[p. 86]

Leaflets glandular-punctate:—

Style short persistent:—

Ovules 2 in each loculus of ovary—1^3. 1> 1 • -urse^{oft}.
 Ovule solitary in each loculus of ovary; leaves sometimes 1-fo^{late}.
 * 136. Glyc^{osn}lit.

Style articulate at top of ovary, deciduous :—

Ovules 1-2 in each loculus of ovary:—

Unarmed plants ; leaves pinnate with leaflets alternate :—

Petals imbricate; cotyledons fleshy, plano-convex :—

Filaments dilated below.....137. Clausena.

Filaments linear-subulate.....138* Murraya

Petals valvate; cotyledons leafy, corrugated; n^{laD} i
 linear-subulate.....139. Micromelum^{osite}.

Armed plants; leaves pinnate or 3-f oliolate, with leaflets opP
 except the terminal:—

Calyx distinctly 4-5-lobed ; leaflets usually 5 or more, rar^{ely 3}
 141. Limonia.

Calyx cupular with entire or obscurely 4-6-toothed margin;
 leaflets always 3.....142. Luyunga.

Ovules more than 2 in each loculus of ovary ; armed trees
 145. Feronia.

Leaflets not glandular-punctate :—

f Leaves odd-pinnate :— [p. 85]

Leaves 3-pinnate.....213. Moringa.

Leaves once-pinnate or 3-f oliolate :—

Herbs; leaves 3-foliolate.....128. Ox^{*11*}

Trees or shrubs ; leaves simply pinnate :—

Leaflets alternate; fruit of 1-5 membranous samaras;
 flowers polygamous, only the male flowers 10-staminate

148. Ailanthu^

Leaflets opposite or subopposite :—

Sepals 5, free, imbricate ; styles 5, distinct; fruit a berry

130. Averrho*

Sepals 5, rarely 4, connate below in a cupular calyx:—

JOvary 1-locular :—[p. 85]

§Ovule solitary; fruit a drupe :—[p. 85]

Ovule pendulous from a basal funicle.....210. Rhus.

Ovule suspended from top or side of ovary :—

Style solitary.....211. **Tapiria.**

Styles 3 or 4.....209. **Odina.**

§ Ovules 2 or more from the ventral line of ovary; fruit a pod :—[p. 84]

Stigma terminal; pod moniliform ...275. **Sophora.**

Stigma oblique ; pod turgid, fleshy, or coriaceous

276. **Ormosia.**

{Ovary 2-more-1^lar :—, [p. 84]

Ovules in each loculus solitary; styles 4 or 5 connivent above.....212. **Spondias.**

Ovules in each loculus 2 ; style simple :—

Fruit a fleshy indehiscent 1-seeded berry

161. **Walsura.**

Fruit a drupe with hard 1-seeded stones :—

Drupe 3-gonous, with a valvate epicarp ; pyrenes 3

151. **Boswellia.**

Drupe globose, with a fleshy entire epicarp;

pyrenes 5 or by abortion 1-3.152. **Garuga.**

+T₁O₁ Leaves even-pinnate : - [p. 84]

Leaves simply pinnate

Styles 5, distinct; leaves sensitive ; herbs129. **Biophytum.**

St 1 yles connate, or style solitary ; leaves not sensitive :—

Leaves opposite; ovary 5-12-celled ; herbs ...125. **Tribulus.**

Leaves alternate ; trees or shrubs, rarely (*Cassia* sometimes)

herbs:—

Ovary 2-more-celled :—

Leaflets 2; ovary 5-celled149. **Balanites.**

Leaflets 4 or more than 4 ; ovary 2-3-celled :—

Ovary 3-celled ; ovules several in each cell; fruit a capsule with winged seeds.....167. **Chloroxylon.**

Ovary 2-3-celled ; ovules solitary in each cell; fruit of 1-3 indehiscent cocci; seeds not winged :—

Seeds without arillus.....192. **Sapindus.**

Seeds arillate.....196. **Nephelium.**

Ovary 1-celled, of a single free carpel:—

Corolla of 5 imbricate petals :—

Anthers dehiscing by a terminal pore. 278. **Cassia.**

Anthers dehiscing longitudinally..... 280. **Cynometra.**

Corolla wanting ; leaflets 2.....281. **Hardwickia.**

Leaves 2-pinnate...—

^Flowers irregular ; petals imbricate :—[p. 86]

Leaves with a short spinescent main-rachis, the 4-8 pinna

simulating a fasciculus of simply pinnate leaves ; caiy
subequal.....286. **Parkins*****

Leaves with a distinct main-rachis :—

Calyx-segments valvate :—

Calyx-lobes subequal, green.....287. **Foin**

Calyx-lobes unequal, the four upper connate, the
free, all coloured.....288. **C**

Calyx-segments imbricat^rery unequal, the lowes

boat-shaped and enclosing the others :—

Pod winged.....289. **Mezoneu**

Pod wingless.....290. **Cassalpi**

^ [Flowers regular ; petals valvate ;—[p. 85]

Anthers gland-tipped :—

Inflorescence elongated :—

Large tendril-bearing climbers; leaves with few lea e
pod very long and wide ; seeds huge ; flowers sessile

292. **Entao*****

Trees or shrubs without tendrils; leaves with »¹¹
leaflets ; pods narrow :—

Flowers shortly stalked; leaflets fairly large, no*^{co}
tiguous, alternate on the secondary rachises; P
narrow at length contorted ; unarmed trees

293. **Adenantha**

Flowers sessile ; leaflets small, opposite ; armed s^{xH}
or small trees :—

Pod turgid with thick edible inesocarp; leaflets snift
not contiguous.....294. **Prosopi***

Pod thin coriaceous, at length contorted ; 1^e
minute, contiguous.....295. **DichroBtachys***

Inflorescence capitate: —

Small aquatic or subaquatic herbs, with small thin po^{ds}
opening early by the upper suture.....296. **Neptuni&'**

Lofty trees, with large thick woody pods tardily dehisce^{0t}
by both sutures.....297. **XyH⁸**

Anthers not gland-tipped; shrubs or undershrubs wi^{***1}
capitate flowers and thin coriaceous pods:—

Undershrubs; stigma clavate.....298. **Desman thus***

Large shrubs or small trees ; stigma capitate

299. **Leucaena***

•Leaves simple ; or if compound (*Paramignya*) 1-foliolate :—[p. 84]

I Leaves alternate, or radical:—[p. 88]

‡ Styles free:—[p. 87]

to the Genera.]

X. -DECANDU-

Leaves parallel-nerved, all radical tufted ;

Leaves reticulate-veined, nerves digitate or pennine

connate, only the styles free :—

Leaves conspicuous :—

Shrubs, climbing with hooked tendrils ; ovary inferior ; styles 8 ; leaves clustered, penninerved, entire. **ladus.**

Herbs ; ovary superior ; styles 1, palm-nerved, digitate lobed, lobes to 12. **Geraniuni.**

Leaves small, scale-like ; erect shrubs, {Styles connate, or style solitary:—[P- 86] Perianth of 1 whorl only ; shrubs or Perianth-lobes with scales above fruit & capsule in each cell of the ovary ; seeds 1— **Aquilana.**

Perianth-lobes with no scales:—

Ovules many on parietal placentas ; seeds numerous ; fruit a capsule. **ovary**

Ovules 2-3, pendulous from apex of flowers in racemes or spikes. **Terminalia.**

Flowers in heads. **325. Anogeissus.**

Perianth of 2 whorls, calyx and corolla. Petals connate in a gamophyllous corolla. Stamens not adnate to corolla-tube. **Agapetes.** Stamens adnate to corolla-tube. **Q. styra X.**

Petals free:—

§Ovary superior:—[p- 883

11 Flowers regular :—[P- 88J Sepals distinct, valvate ; ovary of 1, globose, prickly, Petals glandular at base, indehiscent or of separable fruit & globose of **Petals not glandular at base, elongated loculicidal capsule, prickly or not 119. Corchorus.**

Sepals connate below in **S S * < = ore** •Leaves not gland-dotted ; **[p .88]**

than one (**Buchananiu**) u-v Fruit a kidney-shaped nutlet on a fleshy peduncle and disk. **Marardium.** Fruit a small, nearly discoid solitary fertile member of toe **Buchanania.**

Artificial Guild

- Leaves gland-dotted; ovary 2-more-celled [p. 87]
- II Flowers irregular; ovary of a single carpel - [p. 87]
- Leaves deeply 2-lobed *
- Leaves not 2-lobed ^77- Da.
- § Ovary inferior:—[p. 87]
- Leaves large palmatid; flowers in paniced umbels
- several-celled, cells each fovuled; calyx-faintly toothed
- Leaves entire, penninerved ; calyx-lobes valvate.
- Ovary 4-5-celled; cells many-ovuled; marBb
- Ovary 1-celled; cells 2-5-ovuled; shrubs swamps.....329. k
- fLeaves opposite:—[p. 86]
- ©Perianth 2-seriate; a calyx and a corolla :—[p. 89]
- Leaves stipulate:—
- Trees or shrubs ; style simple :—
- Species of mangrove swamps; embryo without macropodous and germinating while the fruit is s
- tree.....:O- v
- Species of inland forests ; embryo small, immersed albumen, not germinating on the tree.....323# ***
- Herbs; styles free, 3-5, or if connate, stigma 3-8-capsular:—
- Ovary and fruit 5-celled; ovules on axial placenta
- Ovary and fruit 1-celled; ovules on a free-central placenta:—
- Sepals and petals each 5; capsule 3-5-valved; stipular scarious.....^* "P
- Sepals 2 only, petals 4-5 ; capsule circumscissile; stipules reduced to nodal appendages.....!*
- Leaves without stipules :—
- tOvary superior; styles free, sometimes (Hipta-ge) solitary :— [p. 89]
- Herbs; ovary 1-celled; ovules on a basal placenta; capsule:—
- Calyx gamosepalous.....65. Saponan
- Calyx of free sepals.....66. Stellar
- Shrubs, climbing or suberect; ovary 8-celled; ovules in each cell; fruit of one or more winged samaras :—

Styles 3 ; flowers small, regular or nearly so

124. **Aspidopterys.**

Styles 2 or 1; flowers large, irregular I²³- **Hiptage.**

Ovary inferior:—[p. 88]

Ovary 1-celled ; ovules few, suspended by long funicles :—

Calyx-tube above the ovary less than half an inch long

327. **Combretum,**

Calyx-tube above the ovary more than half an inch long

328. **Quisqualis.**

Ovary 4-5-celled, joined to the calyx by vertical walls ; ovules very many on axial placentas :—

Stamens all alike 338. **Osbeckia.**

Stamens very unequal 339. **Melastoma.**

Perianth 1-seriate, a calyx only:—[p. 88]

Shrubs; style simple ; ovary 1-celled :—

Perianth-tube with ten scales above the stamens; limb not accrescent 805. **Linostoma.**

Perianth-tube with no scales above the stamens; limb much accrescent and persistent 324. **Calycopteris.**

Heads ; styles 2 or more, free :—

Calyx-tube elongated; stamens inserted on the calyx

382. **Trianthema.**

Calyx deeply 5-partite ; stamens hypogynous 383. **Mollugo.**

Class XI. DODECANDRIA.

Leaves compound :—

Leaves digitately 3-5-foliolate, not gland-dotted; herbs with narrow varved, capsular fruit 50- **Cleome.**

Leaves unequally pinnate, glandular-punctate ; armed trees with large globose indehiscent fruit 145. **Feronia.**

Leaves simple :—

Leaves all radical, parallel-veined; aquatic herbs, styles free :— Ovary inferior, carpel only the style free 890. **Ottelia.**

Ovary superior; carpels apocarpous :—

Fruit of indehiscent achenes 1017. **Sagittaria.**

Fruit of dehiscent follicles 1013- **Butomopsis.**

Leaves not radical; reticulate-veined :—

Leaves alternate; sepals or calyx-lobes more than 2 :—[p. W

Styles free; stamens in fascicles opposite the petals; ovary ^{half-} superior, 1-celled, placentas parietal, ovules several; trees

855. **Homaim**^{1*}

Style simple, or styles connate:—

Ovary superior :—

Petals connate in a gamophyllous corolla ; stamens opp ^{osi}^e the corolla-lobes:—

Segments of calyx 4. 525. **Bassi**^a

Segments of calyx 6-8. 524. **Dichops**»^s

Petals free; stamens not opposite petals :—

Leaves not gland-dotted :—

Ovary 1-celled, placentas parietal; flowers polyga^{10u^g} trees with large, globose, indehiscent fruit

59. Taraktogenos.

Ovary 2-more-celled :—

Ovules in each cell 2; petals contorted ; sepals vftl*^a or subvalvate ; leaves entire or slightly lobed :— . ^

Calyx enlarging in fruit, the sepals at first shgⁿ imbricate ; fruit nut-like :—

Sepals faintly united at the base only ; segnie^{ntg} subvalvate in fruit:—

Two calyx-lobes expanded into narrow wings

87. **Vatic***

All calyx-lobes equal in fruit 88. **Isauxi**^{S'}

Sepals quite free; quite valvate in fruit; »

3 outer lobes expanded in fruit 89. **Shore**^{is}

Calyx not enlarging, deciduous in fruit; sepa^s always valvate ; fruit an indehiscent or 3-5-coccou^s spiny or bristly capsule. 118. **Triumfetta**^{is}

Ovules in each cell many; petals imbricate; sepft^{is} open in bud; leaves pinnatifid 12G. **PeganUfl**^{1*}

Leaves gland-dotted 144. **Atalantia***

Ovary inferior ; or carpel solitary in base of calyx-tube :—

Ovary 1-celled or carpel solitary :—

Leaves penninerved; stipules small; flowers minute, petft^{is} very minute, sometimes 0 ; carpel solitary, basal in caly*["] tube with 2 pendulous ovules; fruit a thin-walled dry^{or} fleshy drupe. 306. **PygeUJfl***

Leaves 3-nerved from base; stipules 0; flowers conspicuous ; petals valvate; ovary 1-celled with 1 pendulous ovule ; fruit a 1-seeded berry. 400. **Alang m**^{1.}

Ovary 4-more-celled :—

- Small trees with huge palmately-lobed leaves; flowers in umbels.....399. **Trevesia.**
- Aquatic herbs with small entire leaves; flowers not umbellate.....351. **Jussiaea.**
- * Leaves opposite, or if alternate (*Ttdinum* sometimes) the sepals
T ° % :- [p. 89]
- Perianth of only one series (calyx) ; stamens inserted on calyx-tube :—
- Ovary and capsule 3-5-celled381. **Sesuvium.**
- Ovary and capsule 1-2-celled382. **Trianthema.**
- Perianth of two series (calyx and corolla); ovary 2-more-celled :—
- Sepals or lobes of calyx 4 or more :—
- Petals united in a gamophyllous corolla ; stamens inserted on the corolla732. **Symphorema.**
- Petals free; stamens inserted on the calyx :—
- Leaves without stipules ; ovary at the bottom of the calyx-tube, free344. **Woodfordia.**
- Leaves stipulate; ovary adnate to calyx-tube :—
- * Species of mangrove swamps; embryo without albumen, macropodous and germinating while fruit is still on the tree:—
- Petals 5-6, emarginate320. **Ceriops.**
- Petals 8-14, 2-nd322. **Bruguiera.**
- Species of inland forests; embryo small, immersed in albumen, not germinating on the tree ...323. **Caralha.**
- Sepals 2 only ; petals free ; ovary 1-celled; placentas basal :—
- Ovary half-adnate; leaves with scaly or hairy nodal appendages, thick, succulent.....71. **Portulaca.**
- Ovary free; leaves without stipules, flat, *sometime* only *ui>-*
opposite or alternate.....72- **Tlinum**

Class XII. ICOSANDRIA.

- *L Leaves **compound** :- [p. 92]
- Leaves ~~even-pinnate~~ **compound**; carpel solitary:—
- Leaves twice pinnate ; leaflets many, small301. **Aca^{cia}**
- Leaves simply pinnate; leaflets few, large280. **Cynometra.**
- Leaves odd-pinnate or digitate; carpels many:—
- Leaves digitately 3-foliolate; fruit of many achenes, n^o* in **clude**
the calyx-tube [p. 92]307, * **ra^{aria}**

Leaves odd-pinnate:—[p. 91]

Fruit of many achenes not included in the calyx-tube; unan^{*ed} kerbs 308. **Potentilla**ⁿ

Fruit of many or few achenes, included in the calyx-tube; shru^{bs} armed with prickles. 310. **B**^{08*}

•Leaves simple, or, rarely, leaves absent:—[p. 91]

Leaves 0; plants with thick fleshy flattened prickly stems

380. Opuntia.

Leaves conspicuous:—

Leaves alternate:—

Sarmentose shrubs, armed with flattened prickles. 309. **R**^{baS}
Erect, unarmed trees or shrubs \—

Leaves 3-nerved at base; petals valvate; ovary 1-celled a^d 1-ovuled 400. **Alangi**[^]

Leaves penninerved; petals imbricate, rarely {*Pygeum*} V^{N*} absent:—

Stamens in fascicles opposite the petals ; ovary of 2-5 cai^{*P^{els}} connate in a 1-celled chamber with parietal ovules

355 Hamaliu^{''11}

Stamens not fascicled opposite the petals :—

Bipe carpel solitary; not enclosed in the calyx-tube

306. Pygeum[']

Bipe carpels 2 or more, confluent and enclosed in the calyx^x tube :—

Ovary 5-celled; flowers panicled 311. **Erioboty**^{**''}

Ovary 2-3-celled; flowers corymbose •

312. Pourthiae^{**}

T
Leaves opposite:—

Herbs with fleshy leaves; some of the leaves may be alternate :-

Sepals 2 only; ovary 1-celled with basal placenta; petflb^{ftir?ct} K **71. Portulaca.**

fceprus 5 connate in a tube; ovary 5-celled with axial placentas; pe^{*a^{ts}} **381. Sesuviuni.**

Shrubs or trees; leaves never fleshy, all opposite. •-

Leaves stipulate; ovules pendulous •—

; ovary 1-celled **321. Kandelia.**

ovary 2-4-celled **322. Bruguiera.**


..... es; ovules axial; rarely pendulous :—

†Leaves gland-dotted; fruit a berry :— [p. 93]

§Limb of calyx closed in b^{<a}, lobes ^bimbricatecl, rather deeply valvately S⁶parated when in fl^{o^r}; seeds many [p. 93] **382. Psidiu**^{*}-

- Slimb of calyx 4-5-lobed or partite in bud, not further divided when in flower ; seeds few:—[p. 92]
 - Ovules pendulous from top of locules. 333. **Pimenta.**
 - Ovules from the whole inner angle or from a somewhat prominent septal placenta:—
 - Embryo with small seed-leaves. 334. **Myrtus.**
 - Embryo with large fleshy seed-leaves . . . 335. **Eugenia.**
- Leaves not gland-dotted; calyx-lobes valvate:—[P- 92]
 - Fruit a berry; seeds in pulp :—
 - Calyx-tube adnate to ovary. 350. **Punica.**
 - Calyx-tube almost free from ovary. 349. **Sonneratia.**
 - Fruit a capsule ; seeds not pulpy:—
 - Stamens in several rows; seeds large with a distinct wing
 - 347. **Lagerstroemia.**
 - Stamens in one row ; seeds small, faintly winged
 - 348. **Duabanga.**

Class XIII. POLYANDRIA.

- Leaves opposite:
 - Sepals valvate; climbers with free carpels and styles; leaves compound:—
 - Petals many; Herbs  1. **Clematis.**
 - Stamens in decussate pairs or imbricate, rarely closed in bud and then or shrubs with styles and carpels connate or
 - Cells of the ovary simple style; leaves simple :—
 - Cells of the ovary 2-more-celled:—
 - Calyx of 4 or 5 sepals : 80. **Garcinia.**
 - Calyx closed in bud, bursting into 2 valves . . . 77. **Ochrocarpus.**
 - Ovary 1-celled. 70. **Calophyllum.**
 - Cells of the ovary each 2-celled 78. **Mesua.**
 - Leaves alternate :—
 - Leaves compound —ru 941
 - Leaves 3-foliate; petiole sheathing 3. **Thalictrum.**
 - Leaves 2-foliate; petiole not sheathing.
 - Leaves 3-foliate; petiole not sheathing; fruit a 2-valved capsule
 - Herbs ; leaves digitately 5-9 foliolate; fruit a
 - 50. **Cleome.**
 - Small trees ; leaves 3-foliate ; fruit a berry. *. **Crataeva.**

- IF Sepals connate in a 4-5-toothed calyx; leaves gland-dotted, 3-foliolate; fruit a large berry with woody rind [p. 03] 140. **Egle.**
- Leaves simple; or if compound (*Citrus*) then 1-foliolate:— [P' 93]
- f Styles more than 1, free:— [p. 95]
- Sepals and petals arranged in whorls of 3; trees or shrubs.
- Stipules large, enclosing the leaf-buds; petals in several series.
- Carpels in a loose spike on a stalked gynophore... 8. **Mic helia.**
- Carpels densely packed on a sessile gynophore... 9. **Mag nolia.**
- Stipules 0; petals in 2 series:—
- Carpels not confluent in fruit:—
- Petals imbricate..... 11. **Uvar ia,**
- Petals valvate:—
- Anther-cells not concealed by overlapping connective.
- Petals of inner series larger than those of outer:—
- Ovules 6 or more..... 12. **Saccopet** m.**
- Ovules 1 or 2..... * **Miliusa.**
- Petals subequal; ovules 4-8..... 14. **Alphonsea.**
- Anther-cells concealed by overlapping connective:—
- Peduncles hooked; petals connivent at concave base
15. **Artabotrys***
- Peduncles not hooked:—
- Petals of both series flat, lanceolate, subequal spreading from base:—
- Ovules many, 2-seriate..... 10. **Canang ***
- Ovules definite:—
- Ovules 2-6, 1-seriate on the ventral suture
17. **U nona.**
- Ovules 1-2, basal or subbasal ... 18. **Polyalthia.**
- Petals of the 2 series unequal:—
- Petals of outer series spreading; those of inner series concave connivent, overarching the stamens and carpels..... 19. **Mitrephor****
- Petals of outer series thick, rigid, connivent, larger than those of the inner..... 20. **Melodorum.**
- Carpels confluent; petals valvate, those of outer series thick, rigid, connivent, larger than those of inner; anther-cells concealed by overlapping connective..... 21. **AnOff****
- Sepals and petals never 3-merous, either arranged in whorls of 5 each or passing insensibly from sepals to petals in a continuous spiral:—
- XTrees; carpels cohering in the axis, each many-ovuled; styles free; sepals and petals each 5 [p. 95]..... 7. **Dilleni***

^{†H}evbs [†] carpels not or only partially cohering :—[p. 04]

[^]rpels connate below, free above ; ovules in each more than ⁻ ^{se}Pftls and petals each 5 ; leaves dissected. . . . 5. **Nigella.**

^CarPels not connate; ovules in each not more than 2 :—
parpels several, close set on the thalamus; ovule solitary
in each ^J petals 5, sepals 3-5; leaves penninerved

4. Ranunculus.

Carpels many, discrete, irregularly scattered and sunk in
Pⁱts of the turbinate disk; ovules 1-2 in each; petals and
^{se}pals many in a continuous spiral; leaves peltate

^{35>} **Nelumbium.**

^{†Style} ^ST ^Ple on a soli*ary carpel or styles connate with a syncarpous
ovary:

^{Stan} ⁿs adnate to the petals or corolla-tube :—
^{Ovul}es in each loculus of ovary solitary; petals connate

525. **Bassia.**

^Q ^{vul}es in each loculus of ovary 2; petals free or faintly connate

529. **Symplocos.**

Sta ^{not} acInAt ^e to the petals or only slightly adnate at the
^{po}hT** [^] ⁱn » r t i o n o f . b . o t h . :—

^Satmg aquatic herbs; sepals 4; petals numerous :—
^fPals; petals and stamens half-superior, inserted on a disk
^{wh}ch is confluent with the carpels ; plants unarmed

33. **Nymphaea.**

Sepals tubular below and confluent with the disk in which
^f*e carpels are enclosed; petals and stamens superior;
Plants prickly. 34. **Euryale.**

^{Ere}ct or c[^]anibing terrestrial herbs, shrubs or trees :—

Sepals more or less connate below in a calyx-tube :—
Petals contorted ; leaves simple, not gland-dotted :—
Anthers globose, cells at length confluent at top ; stami-
*odes 5 within the stamens. 116. **Brownlowia.**

Anthers elongated, cells distinct; staminodes 0 :—
Fruit free from calyx-tube; 2 calyx-lobes much
accrescent. 8⁶- **Dipterocarpus.**

Fruit slightly adnate to calyx-tube, which is very
short; three outer calyx-lobes much accrescent

89. **Shorea.**

Petals imbricate; leaves pelluoidly gland-dotted, **1-folio-**
ate with winged petiole jointed to the blade ...147. **Citrus,**

Sepals free:—

§^sepals imbricate :—[p. 9G]

Sepals 2-3 :—

Sepals 2, petals 4 ; stigma radiating, sessile

36. **Papa^{*er,}**

Sepals 3, petals 6 ; stigma lobed, style short, distill

37. **Argemoi^{*'}**

Sepals 4-5 :—

Sepals 4, in 2 decussate pairs, the inner imbricate, the outer at times subvalvate; ovules on parietal placentas.

Ovary stalked 52. **Capp^{ar1,}**

Ovary sessile 59. **Taraktogen⁰**

Sepals 5, regularly imbricating :—

Sepals deciduous ; ovary 1-celled; placentas pane or intruded:—

Flowers large yellow, appearing before the leaf

55. **Cochlospermu[^]**

Flowers medium white or pink, appearing with

leaves 50. **B * ***

Sepals persistent:—

Ovary of 1 carpel; a woody climber; follicle 6. **Deling**

Ovary of 3-10 carpels, connate ; trees or shrubs

Fruit a capsule:—

Peduncles many-flowered 84. **Saurauj^{*'}**

Peduncles 1-flowered 82. **Schifl^{1*}**

Fruit of 3-10 drupes seated on a broad disk

150. **Ochna^{*}**

§ Sepals valvate :—[p. 95]

Petals thin, coloured, unguiculate, entire or subentire imbricate or twisted in bud ; anthers oblong :—

Petals with a more or less adnate basal scale, inserted round base of a raised torus; stamens arising from apex of torus:—

Fruit drupaceous ; not prickly 117. **Gre^{wia-}**

Fruit small, globose, indehiscent or separating in cocci; prickly 118. **Triumfetta.**

Petals without a basal scale, inserted directly round stamens on a contracted torus; fruit a loculicidal capsule 119. **Corchorufl.**

Petals rigid, white or sepaloid, almost always laciniate, imbricate-valvate in bud; anthers linear; stamens arising in groups opposite the petals and alternate with lobes of 5-lobed torus ; fruit drupaceous 120. **Elaeocarpus.**

Class XIY. DIDYNAMIA.

Limb of corolla a both plicate and slightly 2-labiately imbricate 641. **Browalha.**

Lobe of corolla \wedge or less markedly 2-labiately imbricate or contorted, never plicate :—

*Carpels \gg r placentas more than 2-ovuled or if only 2-ovuled (nearly all $\text{Acanthace} < e$) the ovules not collateral:—[p. 102]

Leaves compound ; trees :— •

Capsule septifragal, linear, compressed parallel to the septum; leaves 2-3-pinnate; calyx small, cup-shaped; corolla long, slender, harrow tubular.....679. **Millingtonia.**

Capsule loculicidal; leaves 1-2 pinnate; calyx large; corolla-tube short or long, much widened at the mouth :—

Capsule not winged, cylindric or subquadrangular or compressed with sides parallel to septum :—

Calyx tubular-campanulate equally 5-toothed, capsule compressed.....680. **Tecoma.**

Calyx ovoid or oblong, never equally 5-toothed; capsule round, quadrangular or only slightly compressed:—

Calyx spathaceous, cleft to the base on one side in flower, closed in bud; corolla-tube long or short, cylindric below, campanulate above, lobes crisped crenate or incisea, capsule elongate, terete or somewhat compressed, nearly straight.....681. **Dolichandrone.**

Calyx not spathaceous; corolla-tube ventricose:—

Calyx irregularly deeply 3-5-lobed in flower, closed in bud; capsule falcate or twisted ...682. **Heterophragnia.**

Calyx truncate or shortly unequally lobed in flower, closed or open in bud; capsule with a thickened spongy septum.....683. **Stereospermum.**

Capsule with double wings along the margin, oblong, compressed at right angles to the septum; calyx large or swollen, campanulate, limb 5-fid 684, **Pajandia.**

Leaves simple rarely 0, herbs :—

Ovary 1-celled; placentas parietal or intruded :— [P. fruit a

**Leafless parasitic herbs; placentas not intruded,

2-valved capsule :— [p. 98]

Calyx spathaceous, split in front, spreading [p. 98]669. **Eginetia.**

ttCalyx unequally 4-toothed or split both behind ^{^d} »^{fl}
front; corolla with upper lip more erect than the lo**
3-fid lip [p. 97].....670. **orobanch***

**Leafy herbs; placentas intruded; leaves alternate or oppo-
site:—[p. 97]

Fruit a 2-valved or ultimately 4-valved tetragonous capsule
G8G. **Sesam ^**

Fruit an indehiscent or irregularly breaking up berry :—
Calyx plicate ; fruit bursting irregularly ; disk 0
676. **Stauranthera***

Uilyx not plicate ; fruit indehiscent; disk annular
677. **Rhynchocentrum***

^{+n,} ^{c,}
fOvay perfectly 2-celled :—[p. 97]

tOvules on each placenta more than 2, usually many, not super-
posed in one row; seeds albuminous, not supported on retinacul»
capsule never elastically dehiscent:—[p. 100]

Leaves all alternate; corolla subrotate, tube short, thro**
narrow, lobes 5, broad, subequal, the two upper outmost in
*!^{ud} 642. **Calceolaria-tube**
leaves at least the lower if not all o^{^te}; "eoro
inbud !^{^ ^ "} Short (SoPUhi(t) the ^{^ V} lobes **inmost**

Corolla, tube bulging or spurred at the base hl front; lim*
personate the palate on the lower lip closing the throftt,
upper hp also 2-gibbous outmost in bud; capsule opening
by pores; anther-cells discrete; leaves alternate above :-

Corolla spurred in front 643. **Lilian***
Corolla saccate but not spurred in front

^{r ^} 044. **Antirrhinum***

CoioUa tube not enlarged ftt fte [^] in **front**; mh nofc

per^{Corolla}; capsule opening by valves:-

^W ^{With Upper Upl} ^{OT} ^{pend} ^{lobes with more}
Stilic Tr ^y

.. "Ponded throat:—[p. 100]

1, Stamens all inserted within the tube:-[p. 100]

sub ant[^] ^{distifletl} y [^]-lipped, lobes all rounded

2^{fil} ^{Tn} ^{hei} ^{Cells} Plicate, confluent 1-locular;

^o ^{Calyx-lobes} ^{much} ^{septicidal}; valves shortly

curved; leaves ^o ^{PPoSite} « **shorted**; capsule

globose [p. 99] 045. **Russelia-**

Ocalyx-lobes hardly imbricated; filaments fili-
form; leaves opposite below, alternate above;
^ capsule ovate-oblong fp. 98].....646. **Sutera.**
"Corolla distinctly 2-lipped or if lobes subequal
{*HerpestU*) the anther-cells not confluent; capsule
loculicidal or both loculicidal and septicidal; if
anther-cells confluent (*Mimulm*) the lower lip with
2-gibbous throat:—[p. 98]

Corolla with 2-gibbous throat; anther-cells
divaricate; capsule loculicidal:—

Calyx 5-angled and 5-toothed; anther-cells
often confluent 1-celled; leaves all opposite

647. **Mimulus***

Calyx wide campanulate, 2-fid; anther-cells
contiguous but distinct; lower leaves opposite,
"Pper alternate.....648. **Mazus.**

Corolla-throat not 2-gibbous; anther-cells distinct:—

Calyx wide campanulate, 2-fid; corolla-throat
with 2 parallel ridges; anther-cells disjoined,
stipitate; capsule loculicidal

649. **Lindenbergia.**

Calyx 5-partite; corolla-throat without ridges;
capsule both loculicidal and septicidal:—

Anther-cells disjoined, stipitate:—

Uppermost lobe of calyx considerably or
greatly exceeding the others; 2 or all of
the stamens with 1 cell imperfect

650. **Adenosma.**

Uppermost lobe of calyx not much if at
all larger than the others; all the stamens
perfect:—

Placentae either separating in the fruit,
or, if conjoined in a column, the column
not winged; seeds terete

651. **Stemodia.**

Placentae always conjoined in a column,
winged by the remains of the septa;
seeds angular.....652. **Litnophila***

Anther-cells contiguous though distinct;
calyx 5-partite, lateral segments inmost,
much narrower than the others; corolla
with 5 subequal lobes.....653. **Herpestis.**

ITStamens with only posterior pair inserted ^{thin} in corolla-tube, the anterior pair inserted on ^{corolla-} throat; capsule septicidal; leaves all opposite:—[P. 98]
 Calyx with 3-5 ridges or wings; mouth ^{oblique,} 3-5-toothed or 2-lipped.....655. **Torenia.**
 Calyx without wings, 5-lobed or 5-partite, ^{the} segments equal650. **an ellia.**
 § Corolla with upper lip or 2 upper lobes inmost ^{bud.} leaves opposite below, often alternate above; wholly partially parasitic plants ; capsule loculicidal:—[P. 98]

Leaves entire or dentate or reduced to scales :—

Corolla subglobose-campanulate, limb oblique; ^{eff J} campanulate; anther-cells both perfect.. .664. **Alec** ^{tra.}

Corolla narrow-tubular; only one anther-^{cell} perfect:—

Calyx tubular, 5-toothed or 5-fid; corolla-tu^{be} narrow throughout; anthers 1-locular, vertica^{l.} [^]

Corolla-tube straight or slightly incurved, 1^o ^b subequal; basal leaves much larger than ^{thos} above605. **Buchner** ^a ^{4* ritt}

Corolla-tube abruptly incurved at or above ^{*s} middle, two upper lobes smaller than theothei [»] basal leaves not much larger than those above ^{a.}

660. **Stig** ^{front;}

Calyx spathaceous, compressed, split in ^{li b} corolla slightly ventricose at the throat, ^{^ d} obscurely 2-lipped; anthers with one perfect an one sessile empty cell667. **Centranthera***

Leaves pinnately dissected with linear segments; caly* campanulate; corolla-tube short, throat much widened, lobes subequal; anthers with one empty stipitate cell

668. **Sopubi***.

XOvules in each cell 2, rarely more, superposed in one, rarely two rows, or arranged alternately ; seeds without albumen, supported usually on hard retinacula; capsule loculicidally 2-valved, the valves separating elastically from the apex» leaves opposite :—[p. 98]

* Seeds not supported on hard retinacula ; ovules in each cell many:—[p. 101]

©Ovules superposed in 2 rows in each cell; corolla-lobes imbricate, upper lobes outermost in bud; leaves never pinnately cut [p. 101].....690. **Ebermaiera.**

©Ovules not in 2 rows ; corolla-lobes twisted to the left in bud .
•See 10WGIleaV6Spinnately cut CP-1003691 - **Cardanthera**.
2 supported on hard upward-curving retinacula; ovules not collateral or if more than 2 (rarely exceeding 8) super-
posed in one row or else arranged alternately in each cell : - [p. 100]

Corolla with no upper lip, the lower lip large, expanded, lobed; ovules 2 in each cell :-

Anterior filaments with an excurrent process

692. **Blepharis.**

Anterior filaments without any process...693. **Acanthus.**
Corolla with either 2 lips or with 5 subequal lobes:—

Corolla-lobes twisted to the left in bud :—

Ovules more than 2 in each cell; oopsules normally with G or more seeds :—

Corolla distinctly 2-lipped G94. **Hygrophila.**

Corolla subequally 5-lobed :—

Bracteoles large; capsule clavate with a solid base

G95. **Ruellia.**

Bracteoles small, narrow, or 0; capsule seed-bearing throughout :—

Anthers acuminate attips...G96. **Echmanthera.**

Anthers blunt-tipped 697. **Hemigraphis.**

Uvules 2 in each cell ; capsules normally with 4 or fewer seeds ; corolla usually subequally 5-lobed :—

•Placentas separating elastically from the valves from the base upwards :—

Bracteoles very large, reticulately nerved

698. **Petalidium.**

Bracteoles 0 699. **Phaylopsis.**

Placentas not separating elastically from the valves:—

Anthers minutely mucronate at the base

700. **Calophanes.**

Anthers mutioous 702. **Strobilanthes.**

Corolla-lobes imbricated in bud ; ovules 2, rarely 1 in each cell:—

Corolla-lobes 5, subequal:—

Anthers 1-celled ; outer calyx-lobes larger than the others 706. **Crossandra.**

Anthers 2-celled; sepals subequal...708. **Asystasia.**

Corolla distinctly 2-lipped ; anthers 2-celled

711. **Lepidagathis.**

•Carpels 1-ovuled, or if 2-ovuled the ovules collateral; leaves a ^{lway-} opposite :- [p. 97]

Fruit a loculicidally 2-valved capsule, the valves ^{separating} elastically from apex downwards ; climbing shrubs.

087. **Thunbergia.**

Fruit indehiscent with 1-4 pyrenes, or separating into ^{a⁹⁻⁴} ^{rarely} more, 1-seeded cocci or nutlets :—

fOvary entire; fruit containing .1-4, rarely more, ^{res or} ^{ss^{ie} ^ly} subcapsular, each valve with 1 pyrene attached ; leav glandular :—[p. 103]

Leaves digitately compound; trees or shrubs; ^{fto resce<ce} ^{728. Vite<} cymose; fruit indehiscent.....

Leaves simple:—

Inflorescence with the lowest flowers opening first:—

Inflorescence of dense spikes :—

Fruit with 2 or 1 one-seeded pyrenes; spikes ^{it&te>} ^{el. j ^s,} ovoid or cylindrical; calyx small; shrubs or una rarely herbs:—

Fruit succulent or leathery, not dehiscent

719. **La** ^{ntans,} ^{eous}

Fruit dry, partially dehiscing ; one species herbac

720. **Lip** ^{ed;}

Fruit with 4 one-seeded pyrenes; spikes elonga [^] calyx tubular ; herbs.....722. **Yer** ^{boh ^}

Inflorescence racemose; fruit fleshy with 2 two-se ^{'s} pyrenes; shrubs.....723. **Durft** ^{>< #}

Inflorescence centrifugal, cymose:—

^{s Q}

\Cymes lax or dense, paniculate or thyrsoid; tree shrubs:—[p. 103]

Fruit indehiscent:—

or •

Drupe containing one 4-celled pyrene; erect trees, shrubs:—

Flowers large, an inch long72G. **Gmelifl** ^{ra<}

Flowers very small727. **Prem** ^{ft,}

Drupe containing four 1-seeded pyrenes:— ^{te,}

Calyx campanulate or tubular or suburceaia truncate, 5-toothed or deeply 5-fid; erect shrubs

729. **Clerodendron** ^{1^}

Calyx rotate, widely patent, entire or obscure, 5-lobed; climbing shrubs.....730. **Holmskioldi** ^{*,}

Fruit breaking up into 4 valves with 1 pyrene attache ^{^ °} each; trees or shrubs.....731. **Caryopter** ^{ISI}

tCymes densely capitate, 3-9-flowered, the heads subtended by 3-4 involucrate bracts; fruit small, nearly dry; large climbers [p. 102].....734. **Congea.**

†
1. S IV distinctly 4-lobed or -partite; fruit of 4, rarely fewer, [p. --] ^{AO*} indehiscent nutlets; leaves almost always gland-dotted :—

f 2
S V h *74 "partite, nutlets with the attachment small, basilar or ^{g. fl} oblique to the outer side:—[p. 105]

^Nutlets dry :- [p. 105]

*Stamens declinate; anther-cells ultimately explanate confluent:—[p. 104]

©Attachment of nutlets quite basilar; upper lobe of calyx usually broader than the rest and at least broader than the 2 anterior lobes, or, if the calyx-lobes are subequal (*Plectranthus* often, *HyptU* always), the stamens exerted and the lowest corolla-lobe concave :— [p. 104]

"•Lower lip of corolla somewhat declinate, flat or very slightly concave, generally narrower but hardly longer than the 4-lobed upper lip; upper lobe of calyx always widest:—[p. 104]

Calyx deflexed in fruit with the upper lobe large ovate recurved, its margins decurrent on the tube, the other lobes narrow, subulate :—

Corolla-tube short; stigma 2-fld ...736. **Ocimum.**

Corolla-tube usually long; stigma entire

737. **Orthosiphn.**

Calyx suberect or declinate in fruit, the upper lobe broader than the lateral and anterior pairs or (*Moschosma* sometimes) only broader than the anterior and equalling the lateral pair, not decurrent on the tube:—

Whorls in terminal and axillary globose or ovoid heads with imbricate bracts; calyx suberect, upper lip widely 1-lobed, anterior and lateral lobes united in an entire or 4-toothed lower lip.....738. **Acrocephalus.**

Whorls racemose or subspicate; calyx usually declinate, upper lip widely 1-lobed with the anterior and lateral pairs not connate, subequal, smaller; or with upper lip 3-lobed, the posterior and lateral lobes being subconnate, and with a 2-lobed lower lip formed by the 2 subconnate anterior lobes:—

Racemes simple, bracts conspicuous; calyx ⁱⁿ fruit rugosely pitted near base; posterior ^{be} W^λ even when the upper lip is 3-lobed wider than the lateral lobes.....730. **Geniospo**[^];
 Racemes paniced, bracts small; calyx in ^{fl-u} | ^g not pitted, lateral lobes when the upper lip 1-lobed subequal with anterior lobes, w^{to} [^]; upper lip is 3-lobed subequal with posterior lobe.....740. **Moschosit**^a;

**Lower lip of corolla deflexed, concave boat-shaped or saccate:—[p. 103]

Corolla "with upper lip very short, obtusely ³ ⁴ toothed, lower lip much elongated, boat-shaped:—" th
 Calyx equally 5-toothed or somewhat 2-lipped with th 3-toothed upper and 2-toothed lower lip ^{or w} | ^g the upper lip large rounded reflexed, the other narrow subulate:—

Filaments free.....741. **Plectranth**^{**}

Filaments at their bases connate in a ^{shet} | th round the style.....742. **Cole**^{us};

Calyx very oblique 2-lipped with the upper 1 ^{be} large entire inflexed and closing calyx-mouth in & * lower lip truncate obscurely 4-toothed; ^{ov} | ¹ lipped slit in front, the solitary lip 5-tooth ¹ incurved but not quite occluding the cavity* mouth.....743. **Anisochil**^{^S'}

Corolla obscurely 2-lipped with 2 upper lobes ^{fit} similar and subequal to 2 lateral, all about as long ^{*s} the abruptly deflexed saccate lower lip with thickened margins and much contracted base; calyx-teeth subequal.....744. **Hyp**^{tis};

©Attachment of nutlets slightly oblique to the outer side; calyx-lobes subequal, tube 13-15-nerved; corolla 2-lipped, upper lip 2-fid, lower 3-fid, lobes all fl»* spreading; stamens included in the tube [p. 103]

745. **Lavandula**

Stamens erect, or ascending or spreading :—[p. 103]

Corolla-lobes 4 or 5, flat subequal and similar or the lowest somewhat unlike the others but limb not perfectly 2-lipped; stamens diverging; anther-cells short:—[p-¹⁰⁵ [^]

[^] Lobes of corolla 4; anthers 1-celled ; calyx 5-nerved equally 5-toothed:—[p. 105]

Lower corolla-lobe subpatent; whorls in glomerate or paniculate or solitary interrupted spikes; filaments bearded or naked.....746. **Pogostemon.**

Lower corolla-lobe like the others; whorls in slender dense continuous spikes ; filaments bearded

747. **Dysophylla.**

* Lobes of corolla ∇ , lowest rather longer than the others ; anthers, at least when young, 2-celled; calyx 10-nerved, in fruit declinate, distinctly 2-lipped [p. 104]

749. **Perilla.**

{Corolla distinctly 2-lipped:—[p. 104]

Anterior pair of stamens the longer:—

Calyx 13-nerved ; anthers 2-celled, cells short; upper lip of corolla not hooded :—

Calyx equally 5-toothed750. **Micromena.**

Calyx distinctly 2-lipped751. **Calamintha.**

Calyx 5-10-nerved ; anthers 2-celled, cells linear:—

Upper lip of corolla short, nearly flat, not woolly ; stamens exserted, anther-cells of upper pair dimidiate, of lower pair parallel transverse

752. **Anisomeles.**

Upper lip of corolla long concave, densely woolly:—

Anther-cells parallel; stamens more or less exserted ; calyx 5-toothed, teeth spinescent

753. **Leonurus.**

Anther-cells divergent; stamens not exserted; calyx 6-10-toothed:—

Lower lip of corolla longer than the hood

754. **Leucas***

Lower lip of corolla shorter than the hood ^

755. **Leonotis.**

Posterior pair of stamens the longer; calyx 15-nerved, 5-toothed; stamens not exserted

756. **Nepeta.**

II Nutlets succulent; corolla 2-lipped, upper lip ^{hooded} j anther-cells parallel, anterior pair of stamens the long

[p. 103] 759. **Gomphostemma.**

SOvary 4-lobed"; nutlet's with a large oblique or lateral areola on the inner side; stamens erect exserted from the notch or nssur

* the upper lip :- [p. 103]

Corolla deeply slit behind and apparently 1-lipped",

small upper lobes along with the small lateral pair springing from the contracted base of the very large lower lobe

7C0. **Teucrium**¹

Corolla distinctly 2-lipped, upper lip short 2-lobed, notched lateral pair of lobes very small, springing from sides of very large lower lobe. 7C1. **Ajuga**¹

Class XY. TETRADYNAMIA.

*Fruit dehiscent:—[p. 107]

Pods narrow, long :—

Pods bearing seeds and dehiscing throughout their length; sepals not pouched at the base; cotyledons accumbent :-

Pods almost cylindric; seeds globose, 2-seriate or irregular¹? 1-senate; flowers yellow.....39. **Nasturtium**

Pods flattened; seeds compressed, 1-seriate; flowers white

40. **Cardamin**^e

Pods with a seedless indehiscent beak projecting beyond the valves: sepals pouched at the base; cotyledons longitudinally folded or incumbent:—

Pods narrow, cylindric or turgid; beak cylindric or conic¹ seeds 1-seriate ; flowers yellow or yellow with green veins

41. **Brassic***

Pods turgid, beak flattened; seeds 2-seriate; flowers lilac or yellow with lilac veins.....42. **Eruca**

Pods broad, short; sepals not pouched at base :—

Pods globose; seeds many, small, compressed; cotyledons accumbent ; flowers (in our species) yellow.....43. **Cochlearia**.

Pods flattened :—

Pods compressed from the back, parallel to the expanded replum 5 seeds few, compressed; cotyledons accumbent, flowers (in our species) white.....44. **Alyssum***

Pods compressed laterally at right angles to the very narrow replum:—

Valves of the many-seeded pods not winged; cotyledons incumbent; flowers white.

Seeds in each cell 4-6; cotyledons accumbent ... 47. **Thlaspi**

Seeds in each cell 4-6; cotyledons accumbent ... 47. **Thlaspi** beed, ,, each cell solitary; cotyledons incumbent

40. **Lepidium***

"Fruit indehiscent:—[p. 106]

*ods short, globose, 2-celled, each cell 1-seeded; P ^ u n n l s 8 p r e a d i n g n o t
Pouched at base; white flowers and pods both veiy ^ . S e n e b i e r a .

Pods elongated, terete, hollow or transversely sep a with purp ^ v e i n s
Pouched at the base; flowers yellow, white, or lilac ^ . R a p h a n u s .
a > d p o d s b o t h l a r g e

Class XYI. MONADELPHIA.

stamens definite, fewer than 20:—[p. 1¹⁷3

t W e s c o m p o u n d :- [p. 110]

•Carpel solitary; fruit a dehiscent or indent n l y ^ 1 ^ p i n n a t e ;
Flowers regular; petals valvate; leaves eve ^ l . P a r k i a .
stamens 10..... only once ternate or

Flowers irregular; petals imbricate; leaves
digitate or pinnate:— «thers neither mucro-

SPlants with basifixed hairs or glabrous; am
nate nor gland-tipped:—[p. 108] --ex to base [p. 108]

^ I p o d d e h i s c e n t b y b o t h s u t u r e s , f r o m a y e n s ^ ^ ^ g h e a t h g l i t
Leaf-rachis ending in a bristle; stain ^ A b b U S #
above; leaves even-pinnate e s w i t h a t e r m i n a l
Leaf-rachis not ending in a bristle; leav
leaflet:—

223. **Crotalaria**

Leaves digitately 3-7-foliolate^.....

Leaves pinnately compound:—

* * Leaves 3-foliolate :- [P- 10⁶ J]

Nodes of the rachis not swollen.

Style bearded below the stogm a ; p o d s q u a r e ,
Sty P s o p h o c a r p u s .

4-w

Sty

Btamens 10 fertile, at ***J onadelphous but
ultimately 2-adelphous by * * T M ^ G l y c i n e .

stamen ; u ^ i n t e r c a l a r y s t e r i l e ,
Stamens 5 fertile, with 5 in 239. T e r a i n n U S .
persistently monadelphous

Nodes of the rachis swollen:—

240. **Canavalia**

Upper lip of calyx projecting
u f r l i p o f c a l y x n o t p r o j e c t i n g : —

Unarmed climbers:—m b e r s : n l o y
 Pod oblong, turgid; anthers dimorphous,
 6 fertile 241. **Dioclea**.
 Pod linear, flat or subcylindric,
 seeded; anthers uniform. 242. **Pueraria**.
 Armed trees 245. **Erythrina**.

**Leaves 5- or more-foliolate :—[p. 107]
 Style bearded below the stigma ; flowers w^{ith ve}
 unequal petals; standard large. 249. **Ch^{tor}**.
 Style not bearded ; flowers medium; standan
 longer than other petals:—
 Leaflets closely parallel-veined, pod thin. ^{m early}
 dehiscent 251. **Teph^{rosia}**.
 Leaflets reticulately veined; pod ^{tardily} thick,
 dehiscent 252. **Mi^{lettia}**.

II Pod indehiscent:—[p. 107]

Pod not segmented:—

Leaves odd-pinnate :—

Trees or shrubs; margins of leaflets entire :—

Leaflets opposite :—

Pod wingless 253. **Pong^{ia}**.
 Pod winged 254. **Dems^{ia}**.

Leaflets alternate :—

Flowers small; pods narrow. 255. **Dalberg^{ia}**.

Flowers medium ; pods suborbicular

256. **Pterocarpus**

Herbs ; margins of leaflets with the main-veins produce
 as teeth ; leaves 3-foliolate:—

Pod subglobose, hardly longer than calyx
 257. **Melilotus**.

Pod flattened, much longer than calyx
 258. **Trigonella**.

Leaves even-pinnate:—

Rachis of leaf ending in a bristle; herbs with hyp^o
 geal fruits; stamens 9-10 250. **Arach^{is}**.

llachis of leaf not ending in a bristle; large trees wi^t
 pulpy pods; stamens 3 283. **Tamarind[^]**.

Pod of several muricate 1-seeded segments; anthei⁸
 dimorphous; leaves digitately 2-4-foliolate ... 261. **Zornia**.

§Plants with hairs on twigs leaves and calyx fixed by t^{hell},
 centre ; pod thick; leaflets 3, large, toothed [p. 107]
 •273. **Cyamopsi^{ss}**

†Carpels more than one; Or connate in a syncarpous ovary :—
[P. 107]

Styles free or if connate at base (*Sterculia*, *Canliospermum*) the stigmas free and radiating :—

Leaves twice ternate.....100. *Cardiospermum*.

Leaves simply pinnate, 3-foliolate, or digitate :—

Carpels free as well as styles; fruit of one or more follicles, leaves pinnate or 3-foliolate; perianth 2-seriate :—

Calyx accrescent, clasping base of sessile follicle

214. *Rourea*.

Calyx not accrescent, clasping the stalk of the stipitate follicle.....215. *Connarus*.

Carpels connate, at least at first, only the styles completely or partially free :—

Leaves pinnate; styles quite free; fruit a berry; perianth 2-seriate.....130. *A^rrhoa*.

Leaves digitate; styles connate at base; fruit a group of free follicles; perianth 1-seriate, petals absent...105. *Sterculia*.

Style simple or stigma sessile :—

Leaflets dotted with pellucid glands.....142. *Luvun a.*

Leaflets not pellucidly gland-dotted :—

•^Leaves pinnate:— [p. 110]

Stamens 5, anthers opposite the petals; ovules in each cell of the ovary solitary; petals valvate.....189. *Leea*.

Stamens usually 10, if 5 the anthers not opposite the petals, ovules in each cell of ovary usually 2 or more; petal, usually imbricate or contorted, rarely valvate:—

©Seeds not winged:—[p. 101]

Leaflets coarsely serrate, rarely entire; fruit a ttiup, seeds with fleshy albumen and thin cotyledons; ovules in each cell 1-2:—

Flower elongated; caly* 5-p«Ute; petob imbricate, style long; disk annular; ^ single *Melia*.

1-5-celled stone....." valvate;

Flower globose; calyx 5-toothed; V** containing

5 horny pyrenes.....155. *Cipadessa*.

Leaflets entire; seeds with no albumen, cotyledons

fl y t o ^ e s 1-2 in each cell; fruit either a capsule or a

berry; seed arillate:—[p-HO] m 1101

-Fruit a capsule, dehiseeuce JooulicidJ .-IB-

Flowers and staminal tube oblong 01' linear; style long:—

Anthers linear; disk short annulai^{m ovulc>}, solitary in each cell of the ovary

156. **Chisocheton.**

Anthers short; disk cylindrical, ^{lon< f r than} the ovary; ovules 2 in each cell

157. **Ipomoea.**

Flowers and staminal tube globose or style short or 0 :—

Anthers included; filaments ^{Sulte} united; petals 3..... 158, **Annoora.**

Anthers exerted; filaments free toward ^{a pex;} petals 4-5..... «* **HJJ 0**

•Fruit a berry; petals 5; anthers included ^{Jala.} [p. 109]..... 160, *g secCU

Ovules 3-8 in each cell; fruit a large capsule, large, thick, tassaroid, without arillus [p. 1⁹⁴ **Carapa.** 162.

©Seeds winged :—[p. 109]

Disk present; petals spreading ; staminal tube ^{de- Vi arr ^} Petals oblong; staminal tube urceolate ; disk n annular; seeds albuminous, winged only ^{Siet upper} end 163- **S!**

Petals obovate ; staminal tube cupular; disk m wide ; seeds \without albumen, winged at both en. ^{ds} 164. **Soymid***

Disk 0 ; petals oblong, suberect; staminal tube cy dric; seeds without albumen, winged only below

165. **Chickrassia-**

Leaves digitate [p. 109].....101. **Eriodendron***

tLeaves simple or 1-foliolate :—[p. 107]

XLeaves parallel-veined :— [p. 111]

Leaves distichous with a large stem-clasping sheath and a ^{trft" S h} verse ligule at junction of sheath and blade; blade articulate vrit sheath; perianth rudimentary; flowers in spikelets ; bamboos :-" Spikelets many-flowered ; paleas all 2-keeled

1117. **Gigantochlo*/**

Spikelets few-flowered; pale of upper flowers absent, or i present glume-like and not keeled.....1118. **Oxytenanthera-**

Leaves with leaf-sheath small or absent; blade not articulate wit*¹ sheath ; perianth conspicuous, 2-seriate; flowers not in spikelets :—'

Leaves apical, large, flabellate-plicate, lobes with induplicate sides and parallel veins, the apex of leaf-stalk liguliform, Perianth 2-seriate 3-merous; palms; flowers in spadices

984. **Liyistona.**

Leaves not flabellate ; flowers not in spadices:—

Perianth 2-seriate 3-merous, stamens 6 ; leaves all radical:—

Leaves firm, subplicate nerved; flowers small, raceme on a solid slender firm scape with scarious bracts; rhizome wiry.....946. **Peliosantnes.**

Leaves herbaceous, not plicate; flowers capitate, umbellate, or solitary, on a fistular scape with apical involucre of 1 or more membranous bracts ; rootstock a tunicated bulb :—

Ovary superior j flowers small.....909. **AU iunli**

Ovary inferior; flowers large.....956. **Pancratium.**

Perianth 2-seriate 2-merous, stamens 4; stem leafy; leaves

usually opposite or whorled.....**Stemona.**

Leaves reticulately veined :- { p. 110]

leaves alternate:—[p. 113]

Perianth 2-seriate, both calyx and corolla present:—[p. H2]

Flowers regular or nearly so :—[p. H2]

Leaves pellucidly glandular-punctate ; sepals connate 144. **Atalantia.**

Leaves not glandular-punctate:—

= Sepals free; stamens not opposite the petals :- [p. ^-J

Sepals imbricate ; styles free127. **Geranium.**

Sepals valvate, or (*Xanthium*) absent:—

Petals connate in a tubular corolla with inflated 5-toothed limb.....465. **Xanthium.**

Petals free or only faintly connate at the base:

Petals flat:—[p. 112]

Petals deciduous:—

Anther-cells divaricate ; seeds wingless :—

Ripe carpels membranous

* 106*. **Kleinhovia.**

Ripe carpels firm.....107- **Helicteres.**

Anther-cells parallel; seeds winged

108. **Pterospermum.**

Petals persistent:—

Anther 15, in 5 groups of 3 with alternate with 5 staminodes.....U0. **Pentapetes.**

Anthers S, staminoto 0 : -

111. **Meloohia.**

Waltheria.

[Arttfti*0* Guid

+ Petals concave at base, appendage* t tip; anthers marginal, 1-seriate, alternating staminodes:—[p. 111] . ^,oi

Anthers in groups of 2-4 between each P<

staminodes:—

Petals with a clawed ovate blade, ogtil6 or f*^, 5-angled and 5-winged 1^" A

Petals with a linear 2-fid blade; c ^ ^ globular, tubercled 114. < ta ^,

Anthers solitary between each pair of &

nodes; petals 2-fid; capsule prickly

115. Butettneria.

= Sepals connate ; stamens opposite petals [p- *11]

18)* Leea.

•Flowers irregular:—[p. 111]

Petals united in an oblique, 2-lipped corolla, with ^-I parite upper and 3-lobed lower lip? 5@5, nobeli^.

Petals not connate in a tube:—

Stamens 8 or fewer; lowest petal (keel) largest; 9 * ePrils free ; anthers opening by pores :—

Fruit a 2-celled loculicidal capsule; herbs or shrubs or undershrubs:—

Stamens 8 ; two inner sepals wing-like, petition . 'a.

02. Polys^{01*}

Stamens 4-5 ; sepals all subequal, petaloid

61. Salomonia.

Fruit a 1-celled, 1-seeded indehiscent samara;

stamens 8 6 Sy ecurida -

Stamens 10 ; uppermost petal (standard) largest, lo*not two petals united (keel); sepals connate: anther* opening by pores ; fruit a 1-celled pod :—

Leaves pellucidly glandular-punctate ...272. Psora le#

Leaves not glandular-punctate :—

Pods compressed ; seeds 1-2 222.

Heylandia. Crotalaria.

Pods turgid; seeds many 223.

1(Perianth 1-seriate:—[p. 111]

Erect trees or shrubs ; perianth-segments valvate; antheiS at the top of a staminal column:—

Anthers several-seriate ; ovary with cells 2-more-ovule< .

Anthers 1-seriate; ovary with cells 1-ovuled 105. StrcuH* 106. Heritte

Climbing shrubs, or erect, prostrate or climbing < erbs ; perianth-segments connate throughout or imbricate :—

Armed climbing woody shrubs, with recurved spines; perianth completely tubular, plicate in bud; flowers in threes in the axils of large coloured petaloid bracts; stamens 6-8.....764. **Bougainvillea.**

Unarmed erect or climbing plants with usually herbaceous stems; perianth segments imbricate:—

Perianth petaloid, segments very large; climbers with rachis of inflorescence produced as tendrils; stamens 7-8
789. **Antigonon.**

Perianth scarious or rarely herbaceous, segments small; erect, or if climbing, without tendrils; stamens 5 or 4:—

Ovary 2-more-ovuled:—

Fruit a berry; perianth herbaceous; shrubby, often climbing.....766. **Deeringia.**

Fruit membranous; perianth scarious, often coloured; erect herbs.....⁷⁰⁷ CeIosian

Ovary 1-ovuled:—

Ovules erect; flowers capitate; staminodial filaments 0.....768. **Allmania.**

Ovules suspended from a basal funicle; flowers spicate; staminodial filaments interposed between the fertile stamens.....⁷⁷⁴ ffruan

§Leaves opposite; rarely leaves 0:—[p. HI]

•Perianth 2-seriate; both calyx and corolla present; corolla ^{ah}vays gamophyllous; carpels 2 free, only the styles united;

Pollen aggregated in waxy masses (pollinia):—O ¹¹⁶J

Pollen-masses in pairs in each cell (20 in all), sessile in fours (2 pairs) on the corpuscles; anthers with membranous inflexed tips; corolla rotate, lobes valvnte

570. **Genianthus.**

Pollen-masses solitary in each cell (10 in all), sessile or peduncled in pairs on the corpuscle:—

tPollen-masses pendulous from the tip or side of toe corpuscle below the edge of the stigma; anthers wito a membranous inflexed apex; seeds with coma :—[P- 1 ¹⁴J

Corona double, the outer annular attached to the corolla, the inner of 5 free, ligulate scales adnate to the bac^{k of} the stamens; corolla wide rotate-campanulate, angma^{rl-j}

5-lobed; stems twining.....^{oix} J ^{ma}

Corona single or, if double, the outer as well as tne ^{inne} attached to the stamens:—^{^i}

O Stems leafy erect or climbing, not jointed: LI•

Stems erect; corolla-lobes valvate; corona single of 5 processes adnate to the back of the stamens:—

Corolla wide-campanulate; coronal processes radiating from the staminal column, laterally compressed and spurred on the back...572. **Calotropis**¹⁸

Corolla rotate; coronal processes erect, spoon-shaped, and ligulate on the face...573. **Asclepias**⁶

Stems twining; corolla-lobes overlapping:—

Corona annular single, fleshy, truncate, attached to base of 10-ribbed staminal tube

574. **Holostemma**

Corona double an outer annular, membranous, lobed, and an inner of 5 processes, or, if single, (*Raphistemma* and sometimes *Pentatropis*) then not annular:—

Processes of inner corona free from staminal tube; outer corona with 5 distinct lobes opposite the anthers and with a scale or ligule (inner corona) adnate to face of each lobe; corolla campanulate or subrotate

575. **Cynanchum**

Processes of inner (or only) corona adnate to staminal tube:—

Processes of the solitary corona ligulate; corolla campanulate... 576. **Raphistemma**¹

Processes of inner or only corona compressed often spurred on the back; corolla rotate or funnel-shaped:—

Outer corona minute or absent; if vesetate 5-10-lobed with the longer or only 1 lobe opposite the anthers... 577. **Pentatropis**¹⁸

Outer corona conspicuous, always present 5-10-lobed with the larger or only 1 lobe

alternate with the anthers ...578. **Dioscorea**¹

Stems leafless, jointed, trailing; corolla subrotate, overlapping; corona double, outer annular, the outer to the back of the stamens [p. 113]

579. **Sarcostemma**

†Pollen-masses erect, parallel with or rising above the stigma, if horizontal or pendulous (rarely in *Tylosiphora*) still with an erect pedicel:—[p. 113]

•5-Anthers with a membranous inflexed apex, if obtuse (rarely in *Hoya*) then with large stellate single corona, rotate corolla and free petal tips:—[p. 116]

Corona 0; fruits globose; seeds large without coma ; corolla-lobes overlapping to the right... 580. **Sarcolobus.** Corona present, or if (sometimes in *Stephanotis*, rarely in *Marsdenia*) absent, then fruit not globose, and seeds provided with a coma :—

Corona adnate to corolla-tube ; lobes of corolla overlapping to the right..... 581. **Gymnema.**

Corona adnate to the staminal tube or to the anthers:—

*Corolla-lobes overlapping to the right, or if sub-valvate (*TyUypharu* sometuneti), tVicn vnlh etatnenR inserted in the throat or tube of the corolla:—

[P- H6]

Stamens arising from the base of the corolla :-

Scales of corona minute, attached to base of staminal tube; flowers urceolate or wide-campanulate, small..... 582. **Gongronema.**

Scales of corona conspicuous, attached above the base of the staminal tube, rarely 0:—

Corolla large (1 in. long or longer), white, salver-shaped or funnel-shaped; scales of corona erect, attached to back of anthers, sometimes absent..... 583. **Stephanotis.**

Corolla medium (-5 in. long or less) :—

Scales of corona erect:—

Coronal scales attached to staminal tube and back of anthers, rarely absent; flowers purplish or greenish, campanulate or urceolate. 584. **Marsdenia.**

Coronal scales attached only to staminal tube, free above ; flowere yellow or orange, salver-shaped

585. **Pergulana.**

Scales of corona stellately spreading, thick and fleshy, attached to stannal tube; flowers green, rotate...586. DreJea.

Stamens arising from throat or tube of corolla^a, scales of corona laterally compressed, toj^h attached to staminal tube, more or less^{sp}

ing ; flowers small subrotate, sometimes almost valvate.....587. Tylophora.

* Corolla-lobes absolutely valvate, the arising from the base of the corolla; scales attached to staminal tube :—[p. 115].....588. Discijj

Scales of corona erect, membranous, urceolate.....588. Discijj Scales of corona stellately spreading, fleshy ; corolla rotate; anthers rarely a membranous tip.....590. Ceropeg

—Anthers without a membranous inflexed tip double, the outer annular 5-10-lobed staminal tube, inner of 5 scales opposite anthers to face outer; stamens attached to base of corolla tubular with subglobose base and valvate shaped limb, the lobes cohering at their tips; twining; seeds with coma [p. 115].....590. Ceropeg

{Perianth 1-seriate :—[p. 113]

Perianth tubular, corolline, constricted above the ovary, in bud:—

Flowers large, involucrate, bracts connate ; stamens 5-7G2. Mirabilis;

Flowers small, paniculate or umbellate, bracteolft-stamens 1-5.....7G3. Boerhaavia

Perianth of scarious, imbricate, free or nearly free whit* coloured sepals :—

Anthers 2-celled :—

Flowers all perfect:—

Stamens with interposed staminodial filaments :— Sepals hyaline, woolly.....774. &***

Sepals -spinescent.....775. Achyranthe

Staminodes 0.....773. Psilotrichu*

Flowers clustered, 1-3 perfect, surrounded by defones:—

Stamens with interposed staminodial filaments

771. cyathul*

Staminodes 0.....772. Pupal*

Anthers 1-celled:—

Staminal-tube short; stigma capitate, subsessile

776. Alternanthera.

Staminal-tube long ; stigma 2-fid, style long

777. Gomphrena.

Stamens indefinite, 20 or more than 20 :- [P-1^o7[^] imbricate
Leaves opposite, simple, glandular-punctate; sepals^{ib} ^ Hypericum.

leaves alternate, not glandular-punctate :—

leaves simple:—[p. 118]

Ovary inferior, 2-more-celled; petals imbricate: ^ ^ ^ ; sepals

Stamens all perfect; fruit angular, imbricate^{nb} 3 ^ 7 < Barringtonia.

valvate or imbricate..... "er series or both

Stamens not all perfect, those of inner or outer series or both
without anthers ; fruit ovoid or globular, many
y, ^ Careya.

Ovary superior, 2-more-celled :—

Anthers 2-celled:-

..... imbricate; petals

Sepals passing gradually from bracts, ^ Camellia.

imbricate..... th'aceous; Petals connate

Sepals valvate in a calyx at first spreading ^ Jj, iola Bna.

torced.....

Anthers 1-celled :—

..... as dehiscent or

Carpels when ripe separating from the axis

indehiscent cocci:—[p. 118]

Styles as many as the carpels:— indehiscent,

Bracteoles 5; ripe carpels after separation

1-seeded ; ovules solitary ascending. . . . gQ • Malya •

Stigmas linear, carpels many ^ ^ " Malya Bruin.

Stigmas capitate, carpels 8-12. dehiscent:—

Bracteoles 0 ; ripe carpels after separation

Carpels without a false dissepiment ^ ^ . fore-

Ovules, solitary pendulous; carpels ^ ^ leaves

noon- and noon-flowering with ^ 92. Sida.

and lowers. VaT" or more-seeded; after-

Ovules 2 or more; carpels 1- or 2- ^ the large

noon- or evening-flowering plants with ^ Abutilon.

leaves and medium flowered ^ ^ ^

Carpels with a transverse false dissepiment ^ Wigsadula.

1-seeded :—

Styles twice as many as the carpels ; carpels ^ separating;

Carpels opposite sepals; indehiscent after ^ PaYonia.

bracteoles 10..... " " " " after separa-

Carpels opposite petals; indehiscent

in S" — IR sl)inescent or un- ^ Urena •

armed; flowers pink [p. 118]. T

BENGAL PLANTS.

[ArtyTMil Guⁱⁱ

TOracteoles intermixed with flowers, or 0; flowers in
dense heads, white or yellow ; carpels ^{1 (p. 117]}
97. ^{atftit^{a#}}

f Carpels when ripe forming a capsule :—[p- 1*']

Stigmas spreading; seeds reniform:—

Ovary 3-celled; ovules 2 in each cell, ascending. ^{t # flowers}
98. **Kydia.**
panicled, polygamous; small trees. ^{f om f^{sc}}

Ovary 5-celled; sometimes spuriously 10-celled ^{1 ^ ^ ,}
dissepiments ; cells opposite sepals, 3- or ^{n101^{e-}}
flowers axillary
99. **Hibiscus.**

Stigmas cohering in a club-shaped mass :—

Bracteoles 3, large, cordate; seeds cottony ^{Gossypium.}
100.

Bracteoles 3-5, small; seeds not cottony ^{ACT, esi*^f}
101. **Tne&r**

§Leaves compound:—[p. 117J

Leaves digitate; petals contorted; flowers large; ^{fruit large;}
ovary 5-celled :—

Calyx 5-cleft; fruit oblong, woody, indehiscent; ^{see ds not}
packed in cotton; staminal tube long; flowers white
102. **AdanBU** ^{-nia.}

Calyx truncate or irregularly toothed; fruit ovoid, de ^{h scent;}
seeds racked in cotton ; staminal tube short; flowers ^{(in ^ r}

species) red. ^{IOB Bon¹ ^{a^l<}}
^{xv' ^{ti:frt^{il}}}

Leaves equally twice pinnate ; petals valvate; flowers snift

a pod ; ovary of 1 carpel:—

Tod not septate between the seeds:—

Pod straight, with thin valves :—

Sutures thin ; pod indehiscent, or if dehiscent the ^{all}
not opening elastically. ^{lyeS}
^{3 ^ f ^ va^{ve}g}

Sutures thickened; pod revolutely dehiscent, th ^{Handra.}
opening elastically from apex to base. . . . 303. **Ca* - u ^**

Pod twisted, with coriaceous valves. . . . 304. **PithecoloW- ^**

Pod septate between the seeds, indehiscent; valves ^{pon}
fleshy ; sutures thickened. 305. **Entero** ^{lo...m.}

Class XVII. DIADELPHIA.

Stamens 6, in two antero-posterior bundles of 3 each 38. **Fum^aria.** ^{Stamens}

Stamens 10, in an anterior bundle of 9 with a posterior single ^{Stamens}
in two lateral bundles of 5 each :—

Plants with **Kas** ^{etl hairs or} glabrous; anthers not mucronate or gland-tipped:—[p. 122]

†Pod dehiscent by **bofch sutuies**:—[P. 123]

Leaf-rachis ending in a bristle or tendril; leaflets even-pinnate

st ^l **es** large, foliaceous, oblique at base; stamens 9+1:—

Je not bearded; wings free from staminal sheath; leaflets

g ^{hed} **seeds** with a slender funicle; pod turgid ...216. **Cicer.**

ye bearded; wings more or less adnate to staminal sheath;

lets entire; seeds with short funicle:—

Staminal sheath oblique at the mouth; pod compressed:—

Style with a dorsal tuft of hairs or bearded round tip;

ovules usually more than 2.....217. **Yicia.**

Style longitudinally bearded along inner face; ovules never more than 2.....218. **Lens.**

Staminal sheath truncate at mouth; style bearded along the inner face:—

Pod compressed; style flat, dilated at tip...219. **Lafchyrus.**

Pod turgid; style 3-cornered, dilated upwards throughout 220. **Pis** **urn.**

Leaf ^{laClus} tearing a terminal leaflet; leaves odd-pinnate or

P ^t **e** or 1-foliolate or digitately compound:—

L ^{aves} digitately 3-foliolate or petioled 1-foliolate, glandular beneath:—

•Pod turgid; leaves digitately 3-foliolate with bracts small, or 1-foliolate with bracts large; funicle centric

224. **Flemingia.**

P ^o **depressed** between the seeds; leaves (in our species) 1-foliolate with bracts small; funicle attached near end of

hilu ^{«i}.....225. **Eriosema.**

L ^{aves} pinnately compound, rarely 1-foliolate:—

•Leaves 8-foliolate, or if 1-foliolate (*Gromt*) with the leaves not glandular beneath:—[p. 121]

§Pods dehiscing from apex to base:—[p. 1213]

IFLeaves glandular beneath; pod compressed; the 2 upper calyx-lobes connate; funicle centric:—[p. 120]

Ovules 1-2:—

Calyx-lobes accrescent, scariously membranous, the lowest lobe largest.....226. **Cylista.**

Calyx-lobes not accrescent, or if accrescent subequal and not scarious.....227. **Rhynchosia.**

Ovules 4 or more:—

**Climbers; stigma small terminal:—[p. 120]

Tod linear-acuminate, hardly depressed bet^{***1}
 *hVeed^s 228. **Durbana-**
 r^{Gu} oblon e:-obtus^e, deeply transversely ^
 between the seeds. 220. **Atylosia**.
 **Woody shrubs or undershrubs"; stigma dilate^d
 obli: que; pod acut^e, dee' transverse^{ly} W^{illC}
 bet^{es} ULeav^{es} W^{hen} the SGeds tP- " oJ" v 230. **Cajan** ^{us.}
 [p. 119] n^o: glandulaiⁿ bentTMth; leaflets stipulate:

Sty^{le} bearded below the stigma :-
 Poci wood stigma
 obli^{woody}, septate between the velvety seeds : s^{tigma} **Dysolq** ^{um.}
 :^{que} ^{ona} 231. **Dysolq** ^{um.}
 :^{que} ^{ona} ceous, not septate between' the so^{***}
 seeds :-

Stigma oblique :—

Keel spirally twisted 232. **Phaseolu^s**

Keel not spiral:—

Style filiform 233. **Yi&^{n*}**

Style flattened upwards ... 234. **Pachyrhi[^]**

Stigma terminal 235 **Dolich^{os}**

Style not bearded below the 'stigma' :- "

N^{odes} of rachis of racemes not swollen :—

Calyx-tube cylindric with oblique truncate mouth ;
 style dilated in the middle ; standard erect

237. **Dujmaia**.

Calyx-tube C[^]mpanulate > margin toothed; the
 upper teeth subconnate; style uniform; standard I*
 flexe .

Node.iⁱ S[^]atfatl[^] P[^]»- W⁻ GI[^] C[,]

Petal nf mCemes swollen : ~

^etals of equal length—

leaves 3-foliolate :—

Petals far exserted ; stamens usually more or

Be^s monadelphous 242. **Puerani^{*}**

entte^e 243. **Galacti[»]**

leaves 1-foliolate ; upper lobe of calyx 2-tootbea

pptnic , 244. **Grona-**

etals very unequal :—

Anth^{ers} unifom . ' kee, and wings both ghorter
 than standard; alme<l t[^]es; stamens often

SheT^V 245. **Erythrina-**

keel and wmgS; P^ho[^] ! standard shorter th*»

246. **Mucuna**.

dehiscing at seed-bearing apex only, elsewhere seed-
indeciscent: - [p. 119]

very unequal; flowers large..... 247. **Butea.**

Petals

leaves nearly equal; flowers small 248 - **Spatholobus.**
pinnately 5-many-foliolate; pods dehiscing from

- [p. 119]

Style bearded below the stigma; flowers with very unequal

petals, standard

Style not bearded 249 - **cmoria**

than ; flowers medium, the standard not longer

Pod the other petals :-

diadelphous transversely septate between the seeds; stamens truly
..... 250. **Sesbania!**

Pod not septate; stamens sub-1-adelphous, the vexillary

stamen being united by its middle to the sheath :-

Leaves closely parallel-veined; pod thin, early de-
hiscent 251. **Tephrosia.**

Leaflets reticulately veined; pod thick, tardily de-
hiscent 252 > **Millettia,**

Pod **dehiscence** (Desmodium sometimes) opening along
the ventral suture :- [p. 119]

Leaves gland-dotted :- [p. 122]

Leaves segmented; always indehiscent :-

Leaves odd-pinnate :-

Leaves woody climbers; leaflets entire :-

leaflets opposite; stamens usually sub-1-adelphous :-

Pod wingless 253. **Pongamia.**

Pod winged 254. **Derris.**

leaflets distinctly alternate :-

flowers small, pods narrow 255. **Dalbergia.**

flowers medium, pods suborbicular

..... 250. **Pterocarpus.**

Leaves with the veins produced as marginal
net; leaves always 3-foliolate :-

Pod subglobose, hardly longer than calyx

..... 257. **Melilotus**

Pod flattened, much longer than calyx :-

Pod straight or curved, not spiral

..... 258. **Trigonella.**

Pod orally twisted 259. **Medicago.**
several indehiscent 1-seeded segments; in some

discing along the ventral suture :-

• leaves exstipellate :- [p. 122]

Stamens 9 in a sheath slit above, with a free vexillary stamen ; leaves 1-3-foliolate:—

Stipules spinescent; leaves always simple; joints of pod hardly separating; vexillary stamen always free

262. **Alhagj.**

Stipules not spinescent; leaves usually 3-foliolate; 1-foliolate; pod a solitary, 1-seeded, flattened vexillary stamen sometimes partially united to sheath

263. **Lespede**

Stamens in 2 bundles of 5 each; leaves pinnate; J pod papillose or weakly muriculate :—

Leaves even-pinnate, end leaflet replaced by pod folded together within the calyx.....

265.

J {Leaves stipellate; stamens 9 and 1, occasionally subadelphous ; joints of pod about as long as broad

Ovary 1-ovuled ; leaves 1-foliolate.....
Ovary 2-more-ovuled:—

Pod folded together within the calyx :—
Calyx-teeth setaceous, not accrescent.....

Calyx-teeth lanceolate, accrescent.....

Pod straight, exserted:—
A tree ; joints of pod thin, wing-like, large ; fascicles from old wood ; stamens dimorphic

209. **Ou**

Herbs, rarely shrubs; joints of pod not wing-like; flowers from the year's shoots; stamens unilobed

Joints of pod thin, or, if coriaceous, broader than thick; if as thick as their width much longer than broad ; sometimes opening along lower suture

270. **Desmodium.**

Joints of pod coriaceous, about as thick as broad and long.....

271. **Alysicarpus.**

Leaves pellucidly gland-dotted ; leaflets (in our species) their margins toothed ; stamens sub-1-adelphous; ovule pod indehiscent [p. 121].....

272. **Psoraie**

Plants with hairs on twigs, leaves and calyx fixed by their centre of anthers mucronate or gland-tipped ; leaves compound [p. 119].....

274. **Indig**

Class XYIII. POLYADELPHIA.

...^a: pTl^S C^R mPoUnd, odcl -P^{innate} > with alternate leaflets not gland-dotted; solitary; f_ml_t an inflehiscent orbicular pod ; stamens 10

Leave^S • 256# pterocar[?] UB#

2-more^{ced} Sil^o Ple⁰ Uoliolate > gland-dotted ; carpels several, connate in a

Ovn, ^{ovar}y ' stamens 20 or more :—

^{uvar}y superior :—

Lea^ves opposite :--

^ i t a 3-valved capsule 70. **Cratoxylon.**

L^{Fl}uitaberry 80. **Garcinia.**

• ea^ves alternate, 1-foliolate! petiole winged ; fruit indehiscent with

~ lathery riⁿa 147. **Citrus.**

^{Uva}ry inferior:-

• ea^ves alternate or opposite; flowers in heads or spikes; fruit a

J-valved capsule 331. **Melaleuca.**

• ea^ves opposite ; flowera"never "in"headB or spikes; fruit a small or

lai^ge berry. 335. **Eugenia.**

Class XIX. SYNGENESIA.

0 ^{nTj} ^{sup}rior, 5-celled; ovules in each cell 2 or more ; flowers large,

Treated in heads :-

• 7^l <al P^{eta} ^ connate in pairs ; fruit capsular 131. **Impatiens.**

Ova[!] ^{ter}U Petals free ; 'rait a fleshy drupe TM2. **Hydrocera.**

torn. ^y inferior « 1-celled, 1-ovuled; flowers almost always small and

Wgated in heads :-

Corollas of all the flowers tubular to near the mouth, or if any flatly

JPanded f_{rom} a tubular base (ligulate) then only the marginal florets

it^{*} flower-head (ray-florets) so expanded; sap not milky:-[p. 1[^]J

TWyle-arm_B i_{ong}? diatinct> or if very short or the style subentire then

so only in the sterile florets of heads with dissimilar (heterogamous)

florets:-[p. 129]

tFlowera red, purple or white, never yellow; all the florets similar

(homogamous) and tubular or rarely {*Elephantopus*} cleft laterally,

involute of bracts always more than 1-seriate, pappus present,

usually setaceous or rarely (*Ethulia*) absent; receptacle naked or

rarely (*Ageratum*) paleaceous:—[p. 124]

»Anthers cleft at base and appendaged at apex; style-am*

subulate, hairy ; leaves alternate:—[p. 124]

§§Heads distinct; many-flowered:—[p. 124] **Ethulia.**

Pappus absent; achenes 4-5-angled..... 4fJ8<

Pappus present; achenes 10-ribbed :—

- Pappus short, fugacious.....439. **Centratherut**^f
 Pappus long, copious.....440. **Yernoni**[»]
 §§Heads 1- or few-flowered but crowded into dense m^{**68}
 resembling single heads; pappus chaffy [p. 123]
 441. **Elephantopus**-
 UAnthers subtire at base, either truncate or appendaged at
 apex ; style-arms obtuse, papillose ; leaves opposite :—[P-¹³³-'
 Anthers truncate at tip.....442. **Adenostem**^m*
 Anthers appendaged at tip :—
 Pappus paleaceous; receptacle sometimes paleaceous
 443. **Ageratum**-
 Pappus of slender hairs; receptacle always naked :—
 Bracts of involucre numerous, several-seriate
 444. **Eupatori**ⁱ*
 Bracts of involucre 4, with sometimes a small outer one
 445. **Mikan**¹*
 {Flowers, if similar (homogamous) and tubular, yellow ; if ^{dis}*
 similar (heterogamous) at least those of the disk yellow; or *
 none of the flowers yellow (*Lagancea*, *Emilia*) then with the bracts
 of the involucre only 1-seriate; rarely (some *InuloUU*) flowers
 purple with bracts many-seriate, but if so with the heads at least
 neterogamous:—[p. 123]
 §Anthers appendaged at the apex :—[p. 129]
 ^Receptacle naked, smooth or foveolate; sometimes when
 foveolate the edge of the pit fimbriate but not beset with
 proper pale* ; if paleaceous (*Athroisma*) or pseudo-paleaceous
 {*Ccesulm*) then with the anther-bases produced into tails:-
 [p. 126]
 **Bracts of the involucre many-seriate; leaves alternate :—
 [p. 126]
 ttAnthers subtire at the base ; style-arms flattened or
 plano-convex, all, or at least those of the disk-floretP,
 tipped by a cone ; all the flower-heads heterogamous :-
 [P- 125]
 Flower-heads without a proper ray ; pappus hardly
 any or altogether absent:-
 Achenes minute, oblong, smooth; pappus absent
 A , 446. **Cyathoclin**^e*
 Acnemes flattened or subterete with a terminal toothed
 FloL f Iy/appus ring4*7. **Grangea**.
 rioter-heads with distinct ray-florets :—
 nte^ay-florets liguUte, never yellow, ligules 2-3-seri-
 1 pappus long» copious [p. 125] ...448. **Erigeron**.

Ray-florets slender, tubular or with very short
"gules, yellow like those of disk:—[p. 124]

Pappus long, copious..... 449. **Conyza.**

^{Pa}PPUs short, scanty..... 450. **Thespis.**

^{Tt}Anthers cleft at the base or rarely (*Laggera*) with
^bases subentire and, if so, with the style-arms of the
^hermaphrodite florets filiform ; style-arms filiform, linear
^o*obtuse or those of the sterile florets undivided:—[p. 124]
^{*}female florets, if present, filiform:—[p. 126]

Style-arms of hermaphrodite florets filiform ; flower-
heads androgynous:—

Receptacle naked; bracts of the involucre linear,
herbaceous or scarious :—

-Flower-heads medium, separate, solitary, in
corymbs or panicles, not in globose clusters;
or, if clustered (some *Jilumeas*) then the achenes
with a copious soft pappus :—

Pappus copious, of soft or bristly hair : —

Herbs; bracts of involucre narrow ; flowers
not corymbose:—

Anther-cells tailed at the base, the tails of
adjacent anthers confluent 451. **Blumea.**

Anther-cells subentire at base, or, if
tailed, the tails short and not united

452. **Laggera.**

Shrubs; bracts of the involucre broad;
flowers corymbose..... 453. **Pluchea.**

Pappus absent or represented by only 1-2 rigid
scales or bristles..... 454. **Epaltes.**

Flower-heads small, in dense globose or ovoid
masses; herbs with winged stems; pappus absent

455. **Sphaeranthus.**

Receptacle with paleaceous scales; female florets
enclosed in the long outer scales of the receptacle
"i" in the inner bracts of the involucre; flower-
heads aggregated in dense terminal clusters or
short spikes..... 45G. **Athroisma.**

Style-arms of hermaphrodite florets truncate ; bracts
of the involucre hyaline:—

JJFlower-heads many-flowered; heads hetero-
gamous disciform; receptacles naked; hoary or
woolly herbs [p. 12G]..... 457. **Gnaphalium.**

{Flower-heads 1-flowered ; heads crowded in pseudo-paleaceous receptacles, the bracts of the individual heads simulating paleas ; glaucous marsh herbs [p. 125].....

•Female florets, if present, ligulate; nongamous but florets usually all fertile style-arms, rounded or dilated at their tips, naked:-[p. 125]

Achenes faintly ribbed; flowers usually 7-8; pappus-hairs all slender, those of ray-florets

Achenes distinctly ribbed ; flowers discoid; pappus of outer florets scaly, hair-like.....

**Bracts of the involucre 1-seriate; subequal, with sometimes a few short outer bracts (calyx base; heads heterogamous or homogamous; subentire at the base ; receptacle naked :—[p. 125]

Leaves alternate; pappus of fine hairs, generally copious; style-arms of hermaphrodite truncate or obtuse, penicillate or with a hairy

Heads all homogamous; florets (in our purple

Heads rayed, heterogamous; florets all yellow

Leaves opposite; pappus paleaceous or absent arms truncate, penicillate or not, or shortly app at tip; heads heterogamous:—

Pappus absent; leaves entire or dentate ; small, ray sometimes absent.....

Pappus present; leaves pinnatisect; heads showy.....

If receptacle paleaceous ; anthers subentire at base ; the involucre 1-many-seriate ; heads usually radiate, gamous ; style-arms truncate or appendaged or those sterile florets entire; pappus of 2-4 arms, or paleaceous absent; leaves at the base usually opposite, those high opposite or alternate :—[p. 124]

Heads 1-flowered, in globose clusters; bracts of the involucre forming a 5-fid tube ; lower or all the leaves opposite; villous herbs.....

Heads many-flowered:—

§§Pappus consisting of only 1-4 bristly awns, or cup-like, or absent : - [p. 128]

Corollas of the fertile florets persistent on the achenes; Pappus of 1-3 awns; leaves opposite.....467. **Zinnia.**

Corollas of all the florets deciduous :—

JAchenes all thick, or those of the ray-florets 3-cornered and those of the disk laterally compressed; pappus cup-like or composed of 2-3 stiff chaffy or bristly awns with or without intermediate smaller scales or altogether absent; leaves usually opposite :— [p. 128]

Inner bracts of the involucre embracing and enclosing the achenes of the fertile ray-florets; pappus absent :—

Outer bracts of the involucre 5, glandular

468. **Siegesbeckia.**

Outer bracts of the involucre 4, in two opposite pairs, glabrous.....469. **Enhydra.**

Inner bracts of the involucre all flat:—

Scales of the receptacle flat, very narrow, usually few; disk-florets 4-toothed; ligules small; pappus absent or, if present, shortly 2-awned; outer bracts of the involucre numerous...470. **Eclipta.**

Scales of the receptacle concave or complicate, more or less enclosing and embracing the disk-florets :—

ft Achenes wingless, compressed or 4-0-cornered:—[p. 128]

Pappus united at the base into a ring or cup; flower-heads small or medium; ray-florets fertile:—

Ray-florets white, with small ligules; disk-achenes with 2-5 persistent awns ; leaves opposite, at least below 471. **Blainvillea.**

Ray-florets yellow, ligules large; disk-achenes with 1-2 short deciduous awns; leaves all opposite.....472. **Wedelia.**

Pappus-scales or awns free from the base; flower-heads large, ray-florets sterile :—

•Mi Awns of the pappus deciduous or persistent, intermediate scales present, persistent ; leaves always alternate [p. 128] ^

473. **Tithonia.**

IF IT Awns of the pappus deciduous, paleaceous, without intermediate sea leaves alternate or opposite [p. 127]

474. Helianthus

Achenes of the disk ciliate or winged on all margins, laterally compressed; heads sin leaves always opposite [p. 127]

475. Silanthes

Achenes more or less depressed from the pappus of 2, rarely 3-4 bristles, or absent:—

Outer bracts of the involucre almost equal, hejinnaceous; inner bracts separate, almost resemble the scales of the receptacle; ray-florets fertile leaves opposite:—

Achenes almost 4-cornered, without a P but crowned by the densely pilose base of corolla

476. Guisotia

Achenes flat, margins lacerate and winged, pappus present, composed of bristles

477. Synedrella

Outer bracts of the involucre few, small; bracts connate below, membranous:—

Style-arms truncate, penicillate or crowned a short appendage:—

Leaves alternate, pinnatisect; ray-florets sterile; achenes narrow, flat, long-ciliate. with two stiff smooth ultimately recurved awns.

478. Glossocardia

Leaves opposite, simple to pinnatisect, ray-florets sterile; achenes with 2-4 stiff ultimately finely serrulate on inner side:—

Achenes more or less beaked 479. Cosmos

Achenes not beaked.....480. Bidens

Style-arms ending in a long, shortly bifid appendage; ray-florets fertile:—

Achenes long, crowned with 2-3 stiff persistent bristles; leaves mostly radical

481. Glossogyne

Achenes without awns; leaves mostly cauline,

opposite: p. 127 482. Oh-y-wi-thellum leaves

Scales of pappus oblong, chaffy ; heads very small

483. Galmsoga.

Scales of pappus feathery, fringed ; heads

484. Tridax.

Stamens not appendaged at the apex; receptacles (in some species) not paleaceous; pappus absent or reduced to a rayed rim, rarely scaly or short; leaves usually alternate:—[p. 124]

Flower-heads radiate; bracts of the involucre rather broad,

Pappus of short scales sometimes present

485. Chrysanthemum.

Flower-heads discoid, heterogamous; pappus absent:—

Florets of the circumference very numerous; achenes narrow or concave at the top; flower-heads spherical or hemispherical:—

Heads peduncled ; bracts of the involucre 1-2-seriate

486. Cotula.

Heads sessile:—

Bracts of the involucre 2-seriate, spreading in fruit

487. Centipeda.

Bracts of the involucre 3-4-seriate, incurved in fruit

488. Sphaeromorphsea.

Florets of the circumference few; achenes obovate or rounded at top; flower-heads very small, in small

leaves **489. Artemisia.**

Style-arms very short or thickened towards the base, or the style entire in all *L. tL**, which are similar and tubular; deeply 5-fid mouth; anther-cells always appendaged at the apex, subsessile or cleft at the base; receptacle usually paleaceous, leaves alternate, generally spinescent:—[p. 123]

Flower-heads lowered, crowded into dense spherical balls;

* *en* inserted in the straight areoles of the receptacle, silky;

leaves and bracts of the involucre spinescent, thistle-like **0 - chinops.**

Flower-heads many-flowered, separate; achenes narrow. Achenes inserted in the straight areoles of the receptacle.

[p. 130]

leaves and bracts of the involucre spinescent, thistle-like;

Pappus-hairs connate at the base into a deciduous **0**

Filaments free, papillose-hairy; pappus-hairs **4 - cus.**

Filaments connate, glabrous; pappus-hairs ***TM ple 492. Silybum.**

[Artificial] (Ad&*)

Leaves and bracts of the involucre unarmed; filarii¹⁶¹¹ free:—[p. 129]

Pappus-hairs 1-seriate, feathery or only a few of the outer ones simple; filaments glabrous. 493. **Saussurea**

Pappus-hairs many-seriate, subpaleaceous; filaments hairy. 494. **Gollia**

Achenes inserted in the very oblique or quite lateral angle of the receptacle; leaves and bracts of the involucre spirally 3

Bracts of the involucre without any whorl of outer bracts (calyculae); pappus many-seriate, bristles except flattened innermost. 495. **Yolularia**

Bracts of the involucre with a distinct whorl of leafy bracts at their base; pappus (in our species) 496. **Cartium**

Corollas of all the flowers flatly expanded from a tubular base (late), ligules 5-toothed; anthers cleft at base, rarely at apex; leaves radical or alternate; stems always herbaceous, sap milky :—[p. 123]

Pappus of scales with sometimes alternating hairs, or pappus of florets blue. 497. **Clho**

Pappus of hair-like bristles, at least in the central florets heads; florets yellow:—
Pappus-hairs feathery; achenes contracted at both ends, rugose. 498. **Picris**

Pappus-hairs simple :—
Achenes beaked and also contracted at the base, ribbed, rugose or smooth :—

Achenes fusiform or oblong, rarely shortly cylindrical, slender, glabrous or puberulous. 499. **Crep**

Achenes compressed or flattened, ovoid-oblong or narrow 500. **Lactuc**

Achenes not beaked :—
Achenes narrowed at the base, truncate at the apex:—
Achenes oblong with 4-5 rugose ribs. 501. **Picridi**

Achenes compressed, many-ribbed; ribs smooth or 502. **Schus**

Achenes truncate at base as well as at apex. 503. **Launea**

Class XX. GYN&NDRIA.

Leaves with reticulate venation; ovary more or less completely 2-celled:—[p. 131]

Perianth 1-seriate, tubular with inflated base then contracted, hairy ^{i tubukr wUh} **with**
within; limb dilated, obliquely 1-2-lipped; « t a . 6; ovary **celled;**
intruded or oonnivent placentas more or less completely. *f. **loch a.**
shrubs or pevennia] he; bS) of tea twining.....780. A TM !-
Per* nth 2-seriate, calyx 5-lobed often somewhat 2-lipped; cmoUa

Leaves with parallel venation ; ovary 1-cdled with 3-parietal placenta;;
perianth 2-seriate, outer series 3, similar or nearly so, inner series 8 d's-
similer, with two segments more or less like outer, and a thud (Up)
usually ^{vei*} different in shape and size :-[p.-130]

***Ant**her single :-[p. 135]

†**P**ollinia waxy:—[p. 134]

JPollinia free or those of each cell held together at the base by a
^{vi}scid appendage, not attached by their bases or by a cauclicle io
the rostellum :—[p. 133]

§Pollinia4:-[p. 132]

Leaves sessile, equitant, fleshy, congested on short, oi a s-
tichous on elongated stems with the vaginal part much snoitei
than the main leaf; inflorescence terminal; flowers minute,
racemose or spicate; column very short, with no appendages
^{qi} foot ; epiphytes.....

Leaves membranous or coriaceous or chartaceous, not equitan-
or if, very rarely (*Dendrohium* § *Aporum*), ^ n ^ « - " T
fleshy, the flowers axillary and the vaginal portion of the lea
nearly or quite as long as the main portion and with tne
column prolonged below into a foot:—

Terrestrial herbs; leaves membranous, rarely **Wex-**
sometimes) coriaceous, usually sessile; ^{inflor} { ^{escen} ^ - u m n
minal; flowers rather small, in racemes or spikes , co
prolonged below as a foot:—

Lip with basal auricles; column very * < * ? 1 * * " T
^{ai} 4 s 893. Microstyhs.

Lip without 'basai'auncles; column long, with **callosities**
or wings or both ; rostellum sometimes **doubly**. **aris.**

Epiphytic, occasionally casually epigaeal but never truly
terrestrial herbs; leaves chartaceous or coriaceous; **columna**
more or less prolonged below as a foot:— discrete

II Stems solitary or ccespitose or composed of **disc long**
pseudo-bulbs basally attached to a short
rhizome:—[p. 132]

Flowers from the stems or pseudo-bulbs termin^{*1} ^
axillary, solitary or on few-flowered peduncles or
few- or many-flowered racemes, usually la^re and
showy; stems coaspitose with leaves chartaceous
coriaceous more than 2, rarely a creeping rhizome
distant pseudo-bulbs and 1-2 apical leaves; P^{ollinia}
subequal, free.....895. **Dendrobium**

Flowers from lateral scapes at base of P^{seUtionbulbos},
from rhizome between them, solitary or in hea^ry
umbels or racemes; leaves solitary coriaceous, or bin^{*a}
chartaceous, usually from apices of pseudo-bulbs
prolonged rhizome; occasionally the rhizome, less
the pseudo-bulbs inconspicuous or absent; P^{ollinia}
free or occasionally attached by their bases to a srf^l
spherical mass of translucent tissue, the in^{ner pl}
always smaller than the outer:—

Lateral sepals longer than the dorsal; flowers (in
species) umbellate.....896. **Cirrhopeta**

Lateral and dorsal sepals subequal :—

Flowers (in our species) racemose; lateral sep^l
under lip.....897. **Bulbophyllum**

Flowers solitary; sepals spreading....898. **Trichostema**

Stems jointed, composed of elongated pseudo-
bulbs strung on a woody core; leaves solitary or binary,
chartaceous:—[p. 131].....899. **Pholidota**

§Pollinia8:—[p. 131]

Epiphytic herbs, pseudo-bulbous or not; leaves chartaceous or
coriaceous or fleshy; inflorescence lateral or terminal, racemose
or capitate; column short or long, prolonged below &^{s a}
foot; pollinia subequal, all cohering or cohering by fours to
a common membrane.....900. **Eria**

Terrestrial herbs, pseudo-bulbous or not; leaves iriemb^{rft}
or chartaceous, plicate; inflorescence axillary or scapose

Leaves linear from a long slender pseudo-stem; lip
on the base of the footless column, saccate but not spurred,
flowers before leaves.....901. **Pachystomum**

Leaves elliptic, oblong or lanceolate from a short
pseudo-stem; flowers contemporaneous with leaves :—

Sepals and petals free; lip adnate to base of long
less column, spurred.....902. **Phajiphaea**

Sepals connate with long foot of short column in
saccate mentum; lip mobile...903. **Acanthephippium**

•J
†Pollinia attached singly or in pairs or by fours through one or, rarely, two caudicles to a stigmatic gland :—[p. 131]

•J
Anther terminal:—[p. 134]

h
Pollinia 8, attached by fours to a granular caudicle; terrestrial herbs; leaves chartaceous, plicate.....904. **Calanthe.**

^ollnia 2:—

T
Terrestrial herbs, with pseudo-bulbous stems; flowers in peduncled racemes; leaves chartaceous or membranous, plicate :—

Lip distinctly 3-lobed, saccate or spurred at base; inflorescence strict.....905. **Eulophia.**

Lip obscurely 3-lobed, wide ventricose at base but not spurred; inflorescence at first decurved...906. **Geodorum.**

Epiphytic herbs \—

Stem pseudo-bulbous; leaf solitary.....907. **Thecostele.**

Stem not pseudo-bulbous; leaves several:—

Stems very short, leaves closely clustered, flat, fleshy and pendulous; lip spurred, with forked appendages on its disk.....908. **Doritis.**

Stems more or less elongated; leaves coriaceous and flat or fleshy and terete :—

Lip not spurred; leaves terete.....909. **Luisia.**

Lip spurred, adnate to the column or to its foot:—

Column prolonged into a long foot which forms an elongated spur with no callus or septum within:—

Lip jointed to the foot.....910. **Ornitharium.**

Lip not jointed to the foot.....911. **Epideris.**

Column with little or no foot :—

OSpur with neither callus nor septum within :—

[p, 134]

Spur compressed, very deep, pubescent at the mouth; side-lobes none 912. **Rhynchostylis.**

Spur not compressed, long narrowly cylindrical, or wide funnel-shaped or short saccate, rarely (one *Vanda*) reduced to a gibbous swelling and then the leaves flat:—

Side-lobes of lip usually large; spur wide infundibuliform, glabrous at the mouth; if side-lobes of lip small then the spur also subobsolete; flowers large; caudicle of pollinia very broad.....913. **Yanda.**

Side-lobes of lip small or none; mouth naked or fimbriate; spur narrow cylindrical or short

wide saccate ; flowers small; caudicle of
pollinia very narrow ...914. **Saccolabium**^{ra}
©Spur within partially or completely occluded
by calli :- [p. 133]

Spur occluded by a dorsal scale or by calli on
the anterior and posterior walls but with
septum915. **Cleisostomum**^{id}
Spur within partially occluded by calli &
divided by a vertical antero-posterior
into two lateral chambers...916. **Sarcanthus**^{ra}

** Anther dorsal; pollinia 4 in 2 pairs with two very long caudicles
tapering to a minute gland ; epiphytic herbs [p. 133]

917. **Camarotis-**

Pollen powdery, granular or in small masses :—[p. 131]

Anther terminal; pollinia 2 or 4 cohering by their sides with
either gland or caudicle :—

Large leafy epiphytic climbers with coriaceous leaves

918. **Yanill***

Small erect terrestrial herbs :—

Saprophytic leafless herbs with sepals and petals united
a 5-toothed 2-labiate tube919. **Didymopanax**^{EXIS#}

Green herbs with sepals and petals free; leaf solitary
the flower from a separate tuber, rarely from the same tuber
and contemporaneous920. **Pojeria**^{ra}

Anther posticous, vertical but inverted; pollinia 2, or 4 in 2
attached occasionally directly but usually by one or by two
caudicles to a solitary gland ; terrestrial herbs :—

Stigma single, anticus ; pollinia 2, or 4 in 2 pairs :—

Pollinia narrow-clavate, 2, produced and united below to
single caudicle inserted on a long, narrow gland;
plicate, chartaceous or subcoriaceous :—

Lip spurred or saccate, but with no claw...921. **Tropidia**

Lip with a long claw, but neither spurred or saccate

922. **Gorymbis**

Pollinia short clavate, inserted directly on the gland ;
flat, membranous:—

Pollinia 2, lip saccate at the base, the sac usually setose or
tubercled within; gland variously shaped.. 923. **Goodyer***

Pollinia 4, lip neither saccate nor spurred; gland
narrow924. **Spiranthes**

Stigmas 2, lateral, distant; pollinia 2, each 2-partite ;
sessile; leaves flat, membranous:—

- B**ase of lip produced as a long spur. 925. **Yrydagzynea.**
- *Anthers ² ^{aSGOf lip} saccate but not spurred 926. **Zeuxine.**
- leaves ^{or} ^{With only one perfect cell} sessile on the column
- ² ^{sonw} ^{onliguous but} always discrete, the outer cell empty ; pollinia
- ^{8e}Paratele ^A ^{partite} attached with or without caudicles to two
- ^e ^{and} s ; leaves flat, membranous ; terrestrial herbs [p. 131]
- 927. **Habenaria.**

Class X X L **MONGECIA.**

- Minute ^{an} ⁿⁱ granular floating aquatic herblets with little
- ^{no} ^{proper} ^{vascular} organisation ; flowers without perianth :—
- Flowers ^{fr} ^{of} ^{chinks in the} margin of the flattened frond ; fronds
- ^{emitting} ^{roots} ; anthers ² ^{locular} , stamens 1 or 2 1013. **Lemna.**
- Flowers ^{oiuh} ^{Upper surface of the granular frond ; rootless ; anthers}
- 1-celled, ^{tamen} ^{SOUai7} 1014, **Wolffia**
- Conspicuous ^{lar}
- *Inflorescence [^] ^{plaitls with} well-developed fibro-vascular system :—
- ^{erianth} ^{spadix} subtended ^{hyas} ^{pphe} **137**
- leaves ^{tuffed} ^{leguar} ^{^-seriate} ; flowers on a usually branched spadix ;
- shrubs (p. 135) ^{at} ^{6R} ^{pex of a usually} elongated woody stem ; trees or
- Leaves ^{typical} ^{leavgs} ^{pinnatel} ^{divided} :— **136**
- flabellif [^] ^{sect} [>] the segments very obliquely dimidiate-
- waras ^o [^] ^{Padix} ^{interfoliar} but followed progressively down-
- stamens ^{many, free} ^{o86,} ^{Car} ^{yota} .
- Leaves ^{pletely} ^{or} partially once pinnatisect :—
- ^{Spac} [^] [^]
- ^{li} ^{ix} ⁱⁿ ^{terfoliar}, flowering while the leaf in the axil of which
- ^s ^s Produced is still green ; leaves completely pinnatisect, the
- ^{egments} with reduplicate sides :— [p. 13G]
- leaf-segments oblong irregularly toothed ; base cuneate
- costate ; nerves flabellate ; fruit small ; stamens 6, free
- 987. **Wallichia.**
- Leaf-segments linear, nerves parallel, fruit large :—
- ↳warf palms with prostrate branching buried stock ; spadix
- With male flowers on lateral catkin-like branches, female in
- a globose terminal head ; fruit a spherical mass of hexagonal
- 1-celled and 1-seeded ripe carpels ; stamens monadelphous
- 988. **Nipa.**
- Tall palms with erect unbranched stem ; spadix with
- scattered female flowers alone or between two males near
- the bases and with close-set males towards the tips of the
- branches ; fruit a large ovoid, terete or sub-3-gonous nut
- with a fibrous husk ; stamens G, free 989. **Cocoa.**

J Spadix infrafoliar, flowering after the fall of the leaf axil of which it is formed; leaf-segments towards apex more or less confluent as a plaited lamina :—[p- 135]"

Male flowers one on each side of a female along the branches of the spadix ; stamens nearly free. Male flowers minute solitary or 2-nate towards tips of branches ; female flowers larger solitary ; stamens 3 or 6 free

f Perianth absent; spadix unbranched with males above and below on different portions ; herbs :—[p. 135J

Water or marsh plants; leaves entire; barren appendage; ovules orthotropous:—

Floating stemless aquatic herbs ; leaves sessile obovate-clause in a rosette-like tuft; base stoloniferous ; stamens monadelphous

Submerged aquatic or palustrine herbs; leaves submerged buried creeping rootstock ; stamens 1 or 2, free

Terrestrial herbs:—

§Leaves and scapes rising directly from a tuber-like corm, the leaves usually more or less lobed, sect, or parietal; leaves entire (Typhonium sometimes) not peltate; narrower than anther-cells :—[p. 137]

Spadix with a barren terminal appendage :—

Flowers and leaves present together; leaves undivided more or less 3-lobed or pedatipartite; males and neuters remote; neuters present above the females and some below the males ; ovules orthotropous; stamens free 1000. Typhonium.

Flowers appearing before the leaves :—

Males and females remote; neuters present above the females; leaves pedatipartite;* edges of the spathe connate below ; ovules orthotropous; stamens separate 1001. Sauromatum.

Males and females contiguous or nearly so; leaves 3-sect, segments pinnatifid; edges of spathe free; ovules anatropous ; stamens 2-4, free

Spadix without a barren appendage; males and neuters separated by a belt of pisiform pearly-white neuters; appearing before the leaves; leaves 3-sect, segments pinnatifid ; edges of spathe free ; ovules anatropous ; stamens 2 or 3 free 1003. Plesmonium.

§ Leaves and scapes arising from a short **caudex prolonging a**
hypogeeal rhizome or if arising direct from a **tuber-like hypo-**
g*al corm the leaves peltate and undivided; connecuy **e wider**
than the anther-cells ; flowers and leaves present togetne **r.—**
[p. 136]

Leaves peltate ; stamens monadelphous:—

Spadix with a barren appendage; not adnate at its **base to**

thespathe:—

n i t ^ i .1004. Alocasia.

Ovules few, basal....." ^naala

Ovules many, parietal.....1005. Colocasia.

Spadix without an appendage; ovules many parietal.....1006. B. fil.

Spadix quite free from the spathe.....1007. Steudnera.

Spadix to the spathe female part of. ii.....

Leaves not peltate; spadix without a barren **appendage;**

„ 3ta_{mens} 2-4, free!.....1008. TMT T_n

^florescence rarely subtended by a spathe; if with a spathe then

o'spieate:—[p. 135-1

leaves with venation parallel; nearly all aquatic or marsh
Plants:—r_p 140]

Ovary inferior, carpels connate; perianth 2-seriate, 3 **floating**

•Wnent. calycine, 3 inner petaloid; stamens-«-« »• J^ **ocharis.**

aquatics with conspicuous..... flowers **wj.**

Ovary superior:—

Carpels 2 or more, free:— whorled on

, Tufted aquatics with large radical leaves; flowers **vv**

erect scapes, conspicuous, ! - * ^ * erect; ' S 1

m each series; carpels many; seeds ^ **017, Sagittaria.**

0 or more, free.....n onnosite

Creeping submerged aquatics with ^ " T * * J * ; 2.9>.

leaves; flowers minute, axillary, perianth 0, «P

usually only 4 ripening ; seeds pe o ^ ^ ^ ^

Carpel solitary or, if 2 or more, carpels connate; flowers

minute:—

Flowers axillary; creeping submerged aquatics **m f male**

opposite, alternate or whorled leaves; .P TM ^ a line; of

flower double, outer whorl tubular, 4-fid, inner **solitary**

female single hyaline or 0; carpel solitary; ^ m ^ . Naja B.

Flowers in terminal spikes or spikelets or **d leaves**

radical tufted or distichous or 3-stichous along **ti stem;**

erect or floating aquatics or occasionally non-aquatic wholly submerged and creeping :—

Stamens many; filaments free or connate ; flowers aggregated in terminal cylindric spadices without a subspathe ; perianth reduced to setae; tall plants with tufted linear spongy leaves.

Stamens few, never more than 6, often fewer:—

Flowers arranged in heads at the apices of slender, longer than the leaves; flowers 3-merous or 2-merous; perianth segments 6 or 4, rarely fewer; stamens rarely 3, 2, or 1 ; ovary 3- or 2-lobed, and 3- or 2-celled, rarely floating aquatics. 1024

Flowers arranged in spikelets in the axils of glumes; bracts; leaves sheathing at the base; ovary 1-celled; Flowers in axil of a glume; leaves 3-stichous, sheath closed in front, ligule 0; fruit a minute embryo inside albumen ; style simple, stigmas 2-3

Ovary and fruit enclosed in a bottle-shaped utricle with an entire or notched or shortly slit nioth; stamens 2 or 3, free. 1025. Car

Ovary and fruit not enclosed in a utricle:—

Spikelets with a terminal female flower and basal opposite male flowering glumes; stamen

Spikes laxly corymbose ; style 2-fid ; nut round or obtusely angled. 1026. Hypoly

Spikes in a dense oblong panicle; stamens branched; nut 6-ribbed... 1027. Scirpodendr

Spikelets with the terminal flower not female ; female flowers basal:—

Glumes entire with one small median veil. » stamens 1, or 2-3, free. 1028. Selen

Glumes 3-fid, with 5-7 strong veins; stamen 1 or 2, free. 1029. Diplacr

Flowers interposed between a glume and a pale; leaves distichous, sheaths open in front, ligulate, a apex behind; fruit a grain with embryo outside albumen ; styles 2, free or sometimes connate below :—

Spikelets in continuous spikes, racemes or panicles, glumes herbaceous or membranous, the lower smaller sometimes very small or suppressed ; lower flowering glume generally resembling the outer glumes structure and nervation, the upper firmer, at length

rigid, often papery to crustaceous, awnless or, rarely, mucronate; stamens 3:—

Branches of the panicle produced beyond the uppermost spikelets; glume I minute, hyaline; spikelets narrow.....1049- **Chamaeraphis**.

Branches of the panicle not produced beyond the uppermost spikelets; glume I distinct; spikelets subglobose.....1051. **Isachne**.

Spikelets in pairs, one sessile the other pedicelled, or the terminal ternate or solitary on the axis of a usually spike-like raceme; outer glumes more or less rigid and firmer than the flowering glumes, the lower always longer than the florets; flowering glumes membranous; often hyaline, that of the upper floret often awned or reduced to an awn:—

Spikelets of each pair differing in sex and structure:—

Spikelets 3, a sessile 2-flowered and 2 pedicelled enclosed in a peduncled spathe on a short 1-nodal inarticulate rachis; stamens 3 ...1074. **Apluda**.

Spikelets many or few on a plurinodal articulate rachis:—

Lower floret of the sessile spikelet male:—

Margin of glume I of sessile spikelet inflexed; stamens 3.....1075. **Ischaemum**.

Margin of glume I of sessile spikelet not inflexed; stamens 1-2... 1079. **Lophopogon**.

Lower floret of all the spikelets empty:

stamens 3.....1082. **Anthistiria**.

Spikelets forming a spicate inflorescence, male and female spikelets on different spikes or, if on the same spike, with the females at the base of the spike; stamens 3:—

Fruiting spikelets densely crowded on a cylindrical spongy rachis, the grain exposed.1084. **Zea**.

Fruiting spikelets lax, rachis slender, grain concealed:—

Fruiting spikelet with glume I transformed into a crustaceous polished nut-like envelope to the other glumes and the grain...1085. **Polytoca**.

Fruiting spikelet enclosed in the stony polished, nut-like bract.....1086. **Coix**.

II Leaves with venation reticulate; all except *Myriophyllum* and *Ceratophyllum* terrestrial :—[p. 137]

Aquatic plants with submerged or floating stems, whorled:—

Ovary inferior, 4- or 2-celled; stamens 4...318. **Myriophyllum.**

Ovary superior ; 1-celled ; stamens 20-30...880. **Ceratophyllum.**

Terrestrial plants:—

fClimbers provided with tendrils :— [p. 141]

JO vary inferior or only half-superior and if half-superior

1-celled anthers :—[p. 141]

**Anthers 2-celled; ovules horizontal or very rarely vertical ; female flowers usually solitary never paniced ,

never divided into distinct leaflets :—[p. 141]

tfAnthers folded together or sigmoidly curved

§§Corolla rotate or, if campanulate, divided

quite to the base into 5 free petals :—[p. 141]

Petals fimbriate at their margins ; anthers coherent

stamen, 3.....361. **Trichosanthes.**

Petals with entire margins :—

Calyx-tube of male flowers elongated; inserted within and included in tube; anthers cohering in an oblong

stamens 3 : -

Tendrils simple; stigmatic lobes of flower linear simple; petiole without glands

362. **Gymnocarpium.**

Tendrils divided; stigmatic lobes of flower 2-lobed ; petiole with 2 glands at its base

363. **Lagenaria.**

Calyx-tube of male flower short:—

Stamens inserted at mouth of calyx ; filaments

exserted, recurved ; anthers free:—

Fruit dry, endocarp fibrous, opening at apex

stopple; male flowers partly in raceme

stamens 3-5.....364. **Hydnocarpus.**

Fruit soft, endocarp fleshy, indehiscent

male and female flowers alike

stamens 3.....365. **Benincasa.**

Stamens inserted below the mouth of calyx ; filaments

hardly exserted, not recurved

anthers more or less coherent:—

Calyx with 2-3 scales at its base;

flowers with usually a large enveloping bract;
tendrils simple; stamens 2-3

366. **Momordica.**

Calyx without scales at its base; male flowers
with no enveloping bract; stamens 3:—

Connective produced beyond anther-cells»

tendrils simple.....367. **CucumiB.**

Connective not produced ; tendrils 2-3-fid

368. **Citrullus.**

§§Corolla campanulate, not divided much more than
half-way down : tendrils 2-3-cleft; stamens 3, anthers
connate [p. 140]......370. **Cucurbita.**

ttAnther-cells straight, or if curved (*linjonia*) not condu-
plicate nor sigmoid ; stamens 3; anthers free:—[p. 140]

Male and female pedicels alike 1-flowered, clustered :—

Tendrils simple.....³⁷² **Mukia.**

Tendrils 2-fid373. **Bryonia.**

Male flowers in corymbs or racemes ...374. **Melothria.**

**Anthers 1-celled, cells straight; stamens free 3-5, flowers
small, the females in panicles or many-flowered racemes;
ovary half-superior [p. 140]......376. **Actinostemma.**

tOvary superior; anthers 2-celled; fruit capsular Lp- 140]

358. **Modecca.**

tErect herbs, shrubs, or trees, oi'if climbing not provided with
tendrils:—[p. 140]

§Leaves compound :—[p. 142]

Terect tall trees; leaves not pellucid gland-dotted:—[p. 142]

III Leaves odd-pinnate:—[p. 142]

Flowers in male catkins and female spikes; perianth
incomplete or absent; leaflets with resinous glands on
underside; fruit a small globose nut adnate to the
accrescent, 3-lobed scarious reticulate bracts; stamens
4-12; ovary 1-ovuled875. **Engelhardtia.**

Flowers paniculate; perianth complete of a 4-5-lobed
calyx and 4 or 5 petals ; stamens 8 or 10 ; leaves not
glandular beneath :—

Leaflets opposite except the terminal; petals 4-5
imbricate; ovary 1-celled; fruit a small drupe

209. **Odma.**

Leaflets all alternate; petals 5 induplicate-valvate;
ovary 2-5-partite ; fruit of 1-5 samaras

148. **Ailanthus.**

- IMfLeaves digitate [p. 141].....105. **Sterculi***¹
 If Prickly climbing or sarmentose"shrubs; leaves 3-foli^{olate,}
 casually 1-foliolate; leaflets pellucid gland-dotted ; start"^{*g}
 2-5 [p. 141].....*.....134. **Toddali***
 ^Leaves simple:—[p. 141]

Ovary inferior; flowers, at least the female, without »
 complete perianth :—

Leaves alternate :—

Trees; calyx 4-5-partite; stamens 4-7, attached.*^t
 base of calyx with as many alternate clavate gland*^t
 ovary 1-celled, ovule 1, pendulous; fruit a »^u
 crowned by the accrescent spatulate calyx-lobes

330. **GyrocarP**^{us*}

Herbs:—

Stamens many, free or connate; ovary 2-4-celle^{d.}
 ovules very many on axial placentas; P^{eriaD}th
 1-seriate or sub-2-seriate, segments 4 or 5 ; frUⁱ
 capsular or succulent; stem and leaves succulent ^

378. **Begonia.**

Stamens 5, filaments connate ; ovary 1-celled, o^{vule}
 1 erect; corolla tubular 5-toothed, in female flo^w
 0; fruit dry indehiscent; stem and leaves coarse

465. **Xanthium.**

Leaves opposite or sometimes [*Viscum*] reduced to
 scales:—

Stamens 3-4, opposite and adnate to the perianth-
 lobes; tree-parasites (mistletoe).....809. **Yiscui**»-

Stamen 1; marsh-weeds.....318*. **CalHtri**<*

Ovary superior, sometimes unclosed and with ovules
 naked :—

•Ovary present aa a closed cavity :—[p. 151]

tOvary 4-more-locular; flowers not in catkins:—[P-¹⁴³-¹

I Petals 0, or if present, free:—[p. 143]

Ovary 5-locular; perianth 1-seriate; petals 0;
 stamens connate in a column with anthers near
 »ts apex ; leaves alternate :—

Ovary with cells 2- or more-ovuled :—

Fruit of 2-valved cocci817. **Glochidiofl***

Fruit of ripe carpels opening like follicles

105. **Sterculia-**

Ovary with cells 1-ovuled; carpels in fr^{**}
 indehiscent, subsamaroid.....106. **Heritiera.**

Ovary 4-5-locular; perianth 2-seriate ; petals 4-5

stamens connate in one or in 4-5 phalanges, ovary with cells 1-ovuled; fruit indehiscent; leaves ^opposite.....80. **Garcinia.**
 +Petals connate in a salver-shaped corolla; leaves alternate [p. 142].....60L **Cordia.**
 †Ovary not more than 2-3-locular, or if (*Quercus* rarely) 4-5-locular the male flowers in catkins :—[p. 142]
 Male inflorescence in catkins; fruit of 1-more nuts enclosed in an involucre of confluent bracts; stamens 6-12 ; cells of ovary 2-ovuled :—
 Involucre of bracts not armed ; nut solitary, rarely quite enveloped.....877. **Quercus.**
 Involucre of bracts armed with spines; nuts often 2 or more, usually quite enveloped
 878. **Castanopsis.**
 Male inflorescence not in catkins :—
 †Ovary 2-3-, rarely more-loculed; ovules 2 or 1 in each loculus :—[p. 149]
 Flowers aggregate-monoecious, many males (consisting of each a solitary pedicelled stamen) surrounding a single central 3-carpelled pedicelled female, all enclosed in a pseudo-calycine. involucre; perianth proper 0, or rarely of 1-3 minute scales at the joint between pedicel and flower; cells of ovary 1-ovuled; herbs, shrubs, or trees with milky acrid juice:—
 Involucre regular, campanulate or turbinate or slightly irregular; glands free and alternate with segments of involucre...811. **Euphorbia.**
 Involucre oblique, irregular, slipper-shaped, declinate, produced into a spur glandular within.....812. **Pedilanthus.**
 Flowers separate-monoecious ; perianth of sepals almost always present, occasionally also a corolla ; stamens 1-2-seriate or all in the centre of the flower †:—
 § Stamens of the outer or only series opposite the sepals, or if stamens all in the centre of the flower then the cells of the 2-many-carpelled ovary each 2-ovuled ; petals when present small or minute; sepals 1-2-seriate, inflorescence always lateral or axillary :—[p. 145]

BENGAL PLANTS: [Artificial Guide

Flowers in small axillary cymes; **sepals**[^]
5, imbricate; petals 5, each 2-fid; **stamens**^{ns} *
free; ovary 2-3-celled, fruit an indehiscent
drupe; shrubs or small trees

168. **Chailletia-**

Flowers not cymose:—

Male flowers in axillary fascicles,^{or}
solitary axillary:—[p. 145] _____

Corolla of 5, rarely 6, scale-like petals;[^]

Calyx-lobes or segments 5, valva[^]

stamens 5, filaments connate in

column; trees or shrubs:—^{nt}

Ovary 2-celled; fruit indehiscent

814. **Bridelia***

Ovary 3-celled; fruit dehiscent

815. **Cleistanthus-**

Calyx of 5-6 imbricate sepals; **stamens**³⁻⁶, free or only slightly
connate at the base, ovary **single**,
fruit dehiscent 816. **Actepn**¹

Corolla absent in both sexes; **sepals**¹
imbricate:—

Styles in the female confluent in **column**⁷
long or short column or cone faintly
toothed at the apex; calyx 4-6-lobed^e **^**

or toothed; disk 0 in either sex; **anthers**³⁻⁸ connate in an ellip^{soidal} **^**

or oblong sessile column with **H**^{eft}

cells; trees or shrubs

817. **Glochidion-**

Styles separate, or if partly connate
the style-arms and stigmas **6**¹

stamens usually connate (fil^{ice} **in**)

Phyllanthus § Cicca):—

Disk 0 in either sex, or if **present**
(*Agyneia*) then only in **m** **^**

flowers; stamens 3, filaments
united in a column:—[p. 145] -

t {Fruit a capsule with 3 2-valved
carpels; anthers sessile at apex[^]

of column; disk present in males,
herbs [p. 145] ...819. **Agyneia**

{ {Fruit of 3-G indehiscent cocci; disk 0 in either sex:—[p. 144]

Anthers sessile on angles of column; calyx of male 6-lobed, spreading, of female 0-cleft, persistent; small shrubs or undershrubs

820. **Sauropus.**

Anthers adnate to whole length of column ; calyx of male turbinate or hemispheric, lobes much inflexed; of female short, 6-lobed; shrubs or small trees ...821. **Breynia.**

ffDisk present in both sexes, or if absent (*Phyllanthus* § *Emblico*) then only absent from male flowers; stamens united, partly united or free ; fruit dehiscent, or separating into cocci, or indehiscent; herbs, shrubs, or trees [p. 144]

822. **Phyllanthus.**

{Male flowers in axillary racemes; stamens 4-8, free round a rudimentary pistillode, filaments short, anthers didymous; fruit a fleshy irregularly rupturing capsule; trees [p. 144]

827. **Baccaurea.**

§ Stamens of the outer or only series alternate with the sepals or if the stamens all central the cells of the 2-3-, rarely 4-celled, ovary each 1-ovuled; petals if present often exceeding the sepals; inflorescence axillary or terminal:—[p. 143]

IFFJowers in terminal spikes racemes or panicles almost always androgynous; petals present at least in the male flowers, or if absent from both sexes (*Manihot*) then with a large hypogynous disk in both male and female flowers with stamens definite, 2-seriate, marginal:—[p. 146]

Flowers in 2-3-chotomously cymose

panicles; stamens erect; leaves digitately lobed:—

Calyx imbricate in bud, regularly 5-lobed; fruit dry, capsular, each carpel 2-valved:—

Stamens 10, united in 2 series to the lobes of a hypogynous disk; petals none in either sex; shrubs or trees.....828. *U...*

Stamens many, the outer 5 in a series opposite the petals, the inner in a column in centre of flower; petals 5; shrubs or small trees

829. **Jatropha.**

Calyx irregularly valvate, rupturing into 2-3-lobes; fruit a drupe; stamens 8-20, the outer 5 in a series opposite petals, the rest free in the centre of flower; trees.....830. *Aleut...*

Flowers in androgynous spikes; stamens inflexed in bud with anthers reversed, many, inserted on the hairy receptacle; fruit dry, capsular, each carpel 2-valved; leaves penninerved or 3-nerved from base; trees or shrubs

831. **Croton.**

II Flowers in axillary clusters, spikes, racemes or panicles or if terminal with petals absent at least from one flower and usually from both with (Mullein) sometimes, *Ricinus*) the stamens indefinite central, or (*Excoecaria* sometimes, *Sapium*, *Sebastiania*) with stamens definite 1-seriate:—[p. 145]

§Petals present in male flower; filaments straight; ovary 3-celled; fruit capsule [p. 147]

Sepals imbricate; disk developed & both sexes; stamens 15-30, in shrubs or trees; flowers usually 1-sexual racemes, rarely a female at base of male raceme; males small,

fascicled; females solitary

832. **Codisum.**

Sepals valvate; disk in male obscure ;
stamens 5-15, connate below ; diffuse
herbs; male flowers crowded in upper
part of raceme, females solitary pedi-
celled.....833. **Chrozophora.**

§Petals none in either sex:—[p. 14G]

Sepals imbricate, 4-6, free; flowers in
clusters or numerous axillary racemes
or panicles; small erect herbs ; stamens
10-30, central filaments free or a few
connate; anther-cells adnate throughout
to a broad connective; capsule dry, crus-
taceous.....83C. **Baliospermum.**

Sepals or calyx-segments valvate or
occasionally calyx obsolete ; flowers in
axillary, rarely terminal, spikes racemes
or panicles:—

* Calyx of male flowers closed in bud,
usually membranous, oblong, ovoid
or globose, splitting valvately to the
base into 3-5 concave sepals; female
flower sometimes with sepals imbri-
cate:—[p. 149]

†Styles distinct, usually long, en-
tire, 2-fid, multifid or papillose-
fimbriate ; erect herbs or trees, or
erect rarely climbing shrubs; fruit
capsular, rarely drupaceous:—
[p. 148]

‡Filaments free :—[p. 148]

**Anther-cells united only by
their 2 bases; stamens many or
few; herbs or shrubs:—[p. 148]

Styles undivided, spreading,
fringed, short; disk of 3
hypogynous scales; stamens
3, or 5-10...838. **Claoxylon.**

Styles filiform, long, laci-
niate or fimbriate; male
flowers small ebractente,
females at base of male

spikes or in separate spikes
usually with a large bract;
disk 0; stamens 8 to many

839. **Acalypha**

••Anther-cells globose, laterally attached to the connective;
stamens many; ^{*rees} or
shrubs :—[p. 147] ^{*u}

Anther-cells 2; flowers few
minute in axillary or terminal simple or racemose
spikes or racemes, capsular; disk so ifletim^e
present in female flower

841. **Mallow**

Anthers 3-4-locellate; disk 0; style long 2-fid; trees or shrubs; male flowers in axillary racemes, flowers 1-2 on a long axillary peduncle; fruit capsular

842. **Cleidia**

Filaments connate in bundles, branched; disk 0; flowers & terminal subpaniculate racemes; upper male crowded, female; tree-like annual with palmate serrate-lobed leaves; fruit a capsule

845. **Ricinus**

Styles connate; twining herbs with axillary androgynous racemes; stamens 1-seriate; disk 0 or obscure; fruit a capsule

Styles connate below; male calyx 3-5-partite; stamens 1-3; seeds with a fleshy coat. 84C. **Tragia**
Styles united below in a fleshy column incurved above; calyx 3-partite; stamens 3; seeds with a fleshy coat

847. **Cnesmone**

•Calyx of male flower open in bud ; styles entire, free or shortly connate at the base ; stamens 1-seriate; disk 0 ; trees, shrubs, or erect herbs :— [p. 147]

Trees or shrubs ; stamens 3, rarely 2 ; filaments free:—

Calyx 2-3-lobed; flowers in terminal simple or paniced spikes or racemes; males several, females solitary in each bract; females in lower part of spike or on separate spikes; fruit fleshy or pulpy, rarely woody

848. **Sapium.**

Calyx deeply 3-partite ; flowers in lateral axillary or terminal spiciform 1-sexual or androgynous racemes or spikes; males 1-3 in each bract, 2-bracteolate; females at base of raceme or in separate racemes ; fruit crustaceous

849. **Excecaria.**

Herbs ; stamens 2-4, filaments connate at the base: male calyx minute; flowers in slender terminal axillary or lateral racemes; males minute 1-3 in each bract, females solitary at base of raceme or lower and long-pedicelled on the stem; fruit crustaceous

850. **Sebastiania.**

¶i Ovary 1-locular; ovule solitary:—[p. 143]

§§Leaves without stipules; alternate:—[p. 150]

Anthers oblong or linear-oblong; perianth-segments 5, rarely fewer, free, membranous, dry, present in both male and female flowers; bracteate and 2-bracteolate.. 770. **Amarantus.**

Anthers didymous ; perianth of male herbaceous 3-5 partite, without bract or bracteoles ; of female 0.....782. **Atriplex.**

Slaves stipulate :—[p. 149]

Wamens 6 ; **stipules** ochreate

... 788. **Rui**»^{ex}

stamens 5 or fewer; stipules never ochreate :-

Tt^ants with watery juice :—[p. 15U

Anthers in bud erect; style 2-fid; ^{ovUf}

Pendulous; male sepals induplicate-vft¹

vate; stipules lateral 854. **T#0***

Anthers in bud reversed, stamens i*

fle^xed ; style undivided or 0; ovule erect

orthotropous:—

Leaves and stems beset with sting^

hairs; herbs with alternate leaves ft>^d

connate stipules:—

Ovary oblique; style obliquely < ^{vo}

or linear, hooked, with sometii*^{es}

² basal arms 856. **FJeury***

Ov^{ary} straight; stigma subtil^

Papillose 857. **Girardifl****

aves and stems with no stiiigii* .

nairs:—

•Female perianth 3-5-partite or obs^o-

lete>>" stigma penicillate ; flowers i>

^mes or clustered on a fleshy r^{en}

ceptacle :—

Leaves opposite ; flowers *cjmose*

or capitellate 855. **Pi^{rea}**"

leaves alternate; flowers on >>

fleshy receptacle; female periao^

vey small or none

859. **Elatostem***

female perianth tubular, shortly

toothed or subentire, enclosing *^{be}

achene ;—

bruiting perianth dry, membra

n^ous; stigma filiform :—

Shrubs; stigma persistent

860. **Bcehmeria-**

H^erb; stigma jointed, deciduoⁿ³

801. **PouzqWi****

→ 601. **Irou****—

fruiting perianth more or I^{esS}

fles^lV. in fruit adnate to *>>

ovary; stigma penicillate

864. **Debregeasia.**

Plants with milky juice:—[p. 150]

Anthers in bud reversed, stamens inflexed; ovule pendulous, anatropous; shrubs or trees; style 2-fid or 2-partite:—

Female sepals fleshy in fruit and enclosing the achenes; both male and female spicate or male spicate and female subcapitate.....866. **Morus.**

Female sepals not fleshy; male flowers subcapitate; female few or solitary

869. **Streblus.**

Anthers in bud erect; style undivided or 2-fid; ovule pendulous, anatropous or somewhat amphitropous:—

Flowers all exposed:—

Inflorescence elongated; male flowers in cylindric spikes, female in racemes; small trees ...871. **Balanostreblus.**

Inflorescence contracted in globose or oblong heads; erect trees

873. **Artocarpus.**

Flowers on the inner walls of a closed receptacle; trees or erect or climbing shrubs.....874. **Ficus.**

* Ovary an unclosed carpillary leaf with ovules naked; stamens monadelphous:—[p. 142]

Leaves conspicuous, coriaceous:—

Leaves opposite; large climbers; flowers whorled on interrupted spikes; males with a membranous 2-lobed. females with an utricular perianth.....881. **Gnetum.**

Leaves (in our species) alternate; trees; male flowers in sessile clustered spikes; female flowers solitary; perianth 0

882. **Podocarpus.**

Leaves small, scale-like, 4-fariously adpressed, imbricate; trees, male flowers terminal solitary, female in small ovoid or oblong cones; perianth 0

883. **Thuja.**

Class XXII. DKECIA.

Flowers arranged on spadices subtended by a spathe or spatheous bracts:—

Perianth 2-seriate, 3-merous ; spathes simple:—

Trees with erect stems and terminal tufts of leaves; unarmed palms:—

Leaves flabelliform, orbicular or nearly so.

Leaves pinnatisect, segments with induplicate sides.

Climbing shrubs with voluble stems and scattered lepidote with reflexed, shining, closely imbricate adpress

prickly palms :—

Spathes tubular, persisting.

Spathes cymbiform or open, deciduous. 994.

Perianth 0 :—

Trees or shrubs; leaves long, narrow, coriaceous, spicose margins and keel; spadices involved in several spatheous fruit a globose or oblong mass of angular drupes ...995.

Herbs; leaves digitately or pedately 3-more-sect, unarmed simple ; fruit a cylindric mass of small spherical few-seeded berries

Flowers not on spadices subtended by a spathe; if spicate basal involving bract, or if provided with an involving basal not on spikes:—

•Leaves with venation strictly parallel; with narrow distinct basal sheaths :—[p. 153]

Ovary inferior ; aquatic species with flowers enclosed in never spicate :—

Stems branching, leafy; spathes small, sessile; perianth

Leaves whorled ; ovules anatropous.

Leaves scattered ; ovules orthotropous. 886.

Stems 0, or with stolons only ; leaves tufted, radical, spathes on long scapes:—

Perianth single. 887.

Perianth double.

Ovary superior ; perianth single or irregular or 0 :—

Submerged creeping aquatic plants with minute axillary

Erect species; leaves with a long stem-clasping

flowers arranged in spikelets in the axils of glumes:—

Leaves 3-stichous; sheaths closed in front, not ligulate;

glumes without palee [p. 153]. 1025.

Artificial Guide
by se ^|
it smooth;
985. Borassus.
aves, fmit
sed scales;
994. D»
ne scent O^n
ous pfrctsi
Panu^mi*
ed spathe
ded berries
Arisama.
out a
bract then
le^s and
tnes but
ble:—
885# Hy^illa.
^ot^.
Lag&ros E-ill:
nrl &.
Y a 111 S
888, D-ly X*
flowers
1023. N^ajas.
ea*-slu-
heib*.
25, Cft rex.

Leaves 2-stichous; sheaths open in front, ligulate behind;
 Bhruva, glumes paleate [p. 152].....1046. **Spmifex.**
 Leaves with netted reticulation, even when the main-nerves parallel
 the intermediate vein anastomosing:—[p. 152]

plants climbing with the aid of tendrils :—[p. 154]

§Ovary inferior :—[p. 154]

Anthers 2-celled; female flowers usually solitary; leaves entire
 * lobed but never divided into distinct leaflets :—

Anther-cells folded together or sigmoidly curved :—

Corolla rotate, or if campanulate divided almost or quite to
 the base into 5 free petals :—

Petals fimbriate at their margins :—

Ovules 12 ; perfect seeds usually 6, each with an abortive
 seed attached to its side..... 360. **Hodgoma.**

- Ovules and perfect seeds very numerous
 361. **Trichosanthes.**

Petals with entire margins :—

Calyx-tube of male flower elongated :—

Tendrils simple; stigmatic lobes of female flower
 linear, simple; petiole without glands

362. **Gymnopetalum.**

Tendrils divided; stigmatic lobes of female flower
 2-lobed; petiole with two glands at its apex

363. **Lagnana.**

Calyx-tube of male flower short, with 2-3 scales at its
 base; the male flowers with usually an enveloping
 bract; tendrils simple..... 366. **Motilia.**

Corolla campanulate, not divided much more than half-way
 down..... 360. **Cephalandra.**

Anther-cells straight:—

Flowers large, deep yellow; male racemes short
 371. **Thladiantha.**

Flowers small, pale yellow; male pedicels or racemes
 slender:—

Connective produced; fruits on capillary pedicels; male
 flowers usually racemed..... 374. **Melothna.**

Connective not produced; fruits on short pedicels, male
 flowers usually corymbose or subumbellate..... **Zehneria.**

Anthers 1-celled, cells straight; flowers small, the female ones
 ^ny, racemed or paniced; leaves pedately divided in
 leaflets..... 377. **Gynostemma.**

ijOvary superior:—[p. 153]

Leaves twice 3-nate ; perianth of 4 **sepa**s and 4 **petal**s; «W*J 8; fruit an inflated capsule... 190 **Cardiosper**^{10^}.

Leaves simple, 3-5-nerved and reticulate between the ***¹ perianth 2-seriate, each series 3-merous; stamens 6; **berry**961. **Sim**

†Plants **stems or, if climbing, not provided with**
tendrils

Ovary inferior :—

Ovary 3-celled; ovules in each cell 2, superposed; dimb» rarely erectj nerbs or shrubs ; perianth segments 0, *-**»* stamens 3 or 6; leaves simple or compound ...958. **Dios**<*f*

Ovary 1-celled ; ovule solita; erect species with 5-***⁰* rarely 4-merous, perianth :—

Leaves alternate :—

Herbs with prickly leaves, flowers in heads surrounded ^b / an involucre of bracts; anthers syngenesious

491. **Ci**c^{U*}

Trees with unarmed simple leaves ; flowers not in be***⁸ anthers free:—

Petals imbricate ; style 1 ; drupe ultimately superior

205. **Diroyc**arpus.

Petals valvate ; styles 3 ; drupe half-inferior or inferior

206. **UoW**rna.

Leaves opposite, flat and thick, or reduced to scales on a jointed stem; semiparasitic herbs (mistletoe) ...809. **Yiscum**.

̄Ovary superior :—

Anther-cells opening by upcurved at length deciduous valv^ hds; leaves simple, gland-dotted; aromatic erect trees ~ shrubs; penanth-segments 2-seriate, all calycine

Flowers clustered, enclosed in densely imbricating br ^ penanth-segments 6.....y.800. Act**inodapb**»[~]

Flowers umbellate, the umbels involucrate; perianth-segn*^ sometimes 6, sometimes 4, sometimes small or obsolete

801. **fcitstf***[']

Anther-cells eh ,cing by Chinks o' **PO**"B. ^ver by valves:-
*Perianth 1 1 ! , double, of calyx and corolla :~[p. 157]

^Leaves compound : trees or shrubs i-fp- 155]

Stamens united in a tube158. Am<>>^{T*}

stamens not united in a tube :—

Ovary 1-celled ; stamens 8-10 209. **Odina**.

Ovary 2-3-celled ; stamens 8 :- !.....

Leaves pinnate.....193. **Erioglossum.**

Leaves 3-foliolate.....191. **Allophylus.**

1!Leaves simple:—[p. 154]

Stamens fewer than petals ; stamens 2, petals 4, valvate, sometimes petals 0 in female flower; leaves opposite

535. **Olea.**

Stamens at least as many as the petals or lobes of corolla, sometimes more numerous than petals :—

Stamens alternate with petals and not exceeding them in number:—

Leaves opposite; stamens and petals 4...539. **Azima.**

Leaves alternate ; stamens and petals usually 5 :—

Leaves conspicuous:—

Stamens connate in centre of flower; petals smaller than sepals.....814. **Bridelia.**

Stamens not connate:—

Petals valvate ; climbers; ovary 1-celled :—

Flowers capitate; style simple; flowers without staminodes.....174. **Miquelia.**

Flowers racemose; styles 2; male flowers with 5 staminodes opposite the petals, outside the stamens.....175. **Natsiatum.**

Petals imbricate ; erect shrubs or trees:—

Ovary 4-more-celled; style simple; petals connate below.....176. **Ilex.**

Ovary 1-celled ; styles 3; petals free

207. **Semecarpus.**

Leaves very small, scale-like, stem-clasping; sepals and petals imbricate; styles 3

73. **Tamarix.**

Stamens more numerous than petals, or if not exceeding them in number then opposite the petals or corolla-lobes :—

tCarpels 3 or more, free, rarely solitary; perianth usually 3-merous:—[p. 156]

{Petals valvate :— [p. 156]

Perianth 3-merous ; sepals 3, valvate ; petals 6, 2-seriate; stamens many; carpels many ; small trees.....13. **Miliusa.**

Perianth not 3-merous; sepals connate in a 5-toothed calyx; corolla 3-5-lobed; stamens 3-5, opposite the corolla-lobes; ovary 1-celled

with 2 pendulous ovules; climbers **173.** *locjes.*

Petals imbricate; climbers:—[p. 157]

Stamens free; perianth-segments free; *carpls*

3 or more:— *Antitaxis.*

Petals 2; sepals 8; anthers 4...31.

Petals 6:— " *uey*

Sepals 9-12; anthers 6, opening oblique *ns.*

30. *Hsematocarp**

Sepals 6:— *na,*

Anthers 9.....26. **Pycnarrhen**

Anthers 6:—

Carpels in male flowers 0 :— *g*

Stamens with thickened *»F-els*

anthers dehiscing obliquely; *ca ^ a.*

3; styles forked 27- *TinOSI fco* 10vSi*

Stamens with subglobose *a ^ 3 6'*,

dehiscing transversely; carpels *- - .*

styles cylindric. *oft COCCU IUB*

Carpels in male flower 3, rudimental *eft ^*

stamens subcylindric; anthers dehiscing *late*

vertically; carpels 9-12; styles *subcor .*

Stamens connate:— *29. T i l l i **

Anthers 6; perianth-segments all free:—

Carpels 3, accompanied by staminodes *6*

Petals 6, sepals 6; female staminodes *6*

22. **Parab*** *11* ,*

Petals 0, sepals 0; female staminodes *9*

23. **Anamirt*** *is*

Carpel solitary, female staminodes 0; *sepil*

6-10 in male, 3-5 in female; petals always *5*

3-5.....24. **Stephania.** *4 :*

Anthers 4; male petals 4 connate, sepals *4 :*

female petal 1, sepal 1. 25. **CissampC^{loSt}**

Carpels 3 or more, connate in a syncarpous ovary in *f*

trees or erect shrubs; perianth rarely 3-merous:—

[p. 155]

Ovary 3-5-celled; styles free:—[p. 157]

Petals 0, imbricate, only slightly united below

81. **Eurya,**

Petals contorted, connate in a 3-more-lobed

gamophyllous corolla:—

Flowers 3-merous.....527. **Maba.**

Flowers 4-5-merous..... 528. **Diospyros.**

Ovary 1-celled, with 4-5 parietal placentas:—
[p. 156]

Stamens many, hypogynous; petals free:—

Stamens free, imbricate.... 59. **Taraktogenos.**

Stamens connate, subvalvate 60. **Chaulmoogra.**

Stamens 10, adnate to the gamopetalous corolla,
5 with filaments alternate with lobes, 5 opposite
lobes without filaments.....359. **Carica.**

*P Perianth of one whorl (calyx) only, or absent:—[p. 154]

Stamen ^ male flower solitary; trees or shrubs :—

Tall trees with green leafless jointed branchlets with
small scales whorled at the joints; perianth-segments
1~2» minute; ovary 1-celled, 2-ovuled ...876. **Casuarina.**

Shrubs or small trees with large pinnatisect leaves
clustered at apex of an unbranched stem; perianth 0;
ovaries (carpophylls) with naked ovules. 884. **Cycas.**

Stamens in male flower 2 or more than 2 :—

Stamens monadelphous:—[p. 158]

Perianth absent; females in few-flowered cones; males
spicate, fascicled or solitary ; leaves alternate or oppo-
site; ovules naked ; trees.....882. **Podocarpus.**

Perianth present :—

Leaves opposite; flowers whorled on simple or branch-
ing spikes ; ovules naked ; climbers ...881. **Gnetum.**

Leaves alternate; ovules enclosed in the cells of a
1-more-celled ovary; trees or shrubs :—

Ovary 1-celled, 1-ovuled :—

Seeds with a mace; stamens connate in a central
column; trees.....793. **Myristica.**

Seeds without a mace; stamens connate below
in a ring or tube; shrubs armed, climbing, or
trees.....765. **Pisonia.**

Ovary 3-, sometimes more-celled :—

[Small trees; flowers in axillary clusters:—[p. 158]

Fruit smooth; ovary often more than 3-celled,
styles columnar; ovules 1 in each cell

817. **Glochidion.**

Fruit tubercled or echinate; ovary 3-celled
styles distinct; ovules 1 in each cell

835. **Chaetocarpus.**

JShrubs: flowers in axillary spines,
3-celled, ovules 1 in each cell [p. 1⁵⁷J

844. Ho

ovary

monoia.

§Stamens free :—[p. 157]

f Ovary 2- or more-celled :—[p. 159]

Leaves compound :—

Leaves even-pinnate.....195.

sc hleichera.

Leaves 3-foliolate.....

813* B1S chofia.

Leaves simple :—

Sepals imbricate —

Cells of the ovary each 1-ovuled ; stamen

s niafly
834. Gelonium.

Cells of the ovary each 2-ovuled:—

Stamens many; sepals ciliate;
celled; fruit a berry.....57.

oval* 2 5,
Fl.* o upt ja.

Stamens definite, or if many
sometimes) the sepals not ciliate :—

W ostemon

Fruit a loculicidal capsule

Hon*8''
198. Do--

Fruit indehiscent or tardily dehiscent ^

Male flowers in axillary spikes, r^{ac}

or panicles :—

Seeds not arillate.....826.

- oros8''
Ap^{oi}

Seeds arillate.....827.

B^{acc} aurea.
or soli-

Male flowers in axillary fascicles

tary :—

Fruit a drupe ; trees :—

Stamens 2-4 ; drupe 1-celled

panjiva.
823. Put -celled

Stamens 8 or more ; drupe^{2, ^}

. 824. Cyclostemo ^

Fruit a berry with 6 cocci enclose
an indehiscent epicarp

818. Fluegg^{e ^}

Sepals valvate, at least in the male, or open
bud ; ovules 1 in each cell of ovary :—

Calyx of male unequally 4-toothed, of

aje
ng

5-toothed closed in bud ; flowers small, in
simple spikes or racemes, all axillary; &^{nt}

he ^

4-celled.....837.

Endosperm^{1 ^}

Calyx of male partite to the base, closed in bu .
or if shortly 3-partite open in bud :—

Calyx of male closed in bud, splitting valvately to the base into 3-5 concave sepals :—

Anthers 2-celled:—

Anther-cells oblong; males in long, lax, lateral racemes; females solitary on a long peduncle, or racemose ; fruit drupaceous; leaves opposite..... 840. **Trewia.**

Anther-cells globose; both sexes with flowers in simple or branched axillary or lateral spikes or racemes ; fruit a capsule: leaves alternate or opposite

841. **Mallotus.**

Anthers 3-4-celled, the cells globose; fruit capsular:—

Styles very long, 2-fid; male flowers in long axillary racemes; females 1-2 on a long axillary peduncle..... 842. **Gleidion.**

Styles entire, short or long; flowers in axillary racemes or branched panicles; males clustered; females solitary or few

843. **Macaranga.**

Calyx of male flower open in bud, rather deeply 3-partite; flowers in lateral axillary, or in terminal spikes; fruit crustaceous

849. **Excoecaria.**

tOvary 1-celled:—[p. 158]

Placentas 2-4, parietal :—

Perianth 0; stamens 2 or more; placentas 2-4, many-ovuled..... 879. **Salix.**

Perianth 1-seriate, distinct:—

Stamens many; placentas 2-4, few-ovuled

58. **Xylosma.**

Stamens 4 ; placentas 4, many-ovuled

379. **Tetrameles.**

Placenta solitary:—

Ovary 2-ovuled ; stamens 2..... 825. **Antidesma.**

Ovary 1-ovuled ; stamens 5 or fewer:—

•Leaves without stipules :—[p. 160]

Female flowers ebracteate; perianth sub-globose, 3-4-toothed..... 781. **Spinacia.**

Female flowers 2-bracteate; perianth 0

782. **Atriplex.**

*Leaves with stipules:—[p. 159]

Perianth 0.....791. **PiP**^{er§}
Perianth calycine, 1-seriate, regular or i^f,
regular :—

Plants with watery juice :—

Anthers in bud erect; style 2-M; ovule
pendulous:—

Trees with penninerved leaves; ovu^{le}
anatropous; male sepals indupH^{cate},
valvate.....854. **Trema**.

Herbs or annual undershrubs with digi-
tate leaves; ovule obcampylotropous»
male sepals imbricate...855. **Cannah**^{1*}

Anthers in bud reversed; stamens in*
flexed; style undivided or 0; ovule erect,
orthotropous:—

Female perianth 3-5-partite, or obsq-
lete; stigma penicillate; flowers in
cymes, or clustered on a fleshy recep-
tacle :—

Leaves opposite; flowers cymose or
capitellate.....858. **Pile***'

Leaves alternate; flowers on a fleshy
receptacle; female perianth very
small or 0.....859. **Elatosteina**.

Female perianth tubular, shortly toothed
or subentire, enclosing the achene :—

Fruiting perianth dry, membranous J
stigma filiform.....860. **Bcehmeria**.

Fruiting perianth more or less
fleshy:—

Ovary free; stigma penicillate;
leaves narrow 862. **Sarcochlamys***

Ovary adnate ; leaves broad:—

Stigma sessile, subpeltate, ciliate
863. **Yillebrunea**.

Stigma penicillate

864. **Debregeasia**.

Plants with milky juice :—

Anthers in bud reversed; stamens in-
flexed; ovule pendulous, anatropous
shrubs or trees:—[p. 161]

Style undivided, elongated; male flowers spicate, female in globose heads; achenes stipitate

865. **Broussonetia.**

Style 2-fid or 2-partite :—

Female sepals fleshy in fruit and enclosing the achenes; flowers numerous, both male and female spicate, or male spicate and female subcapitate.....866. **Morus.**

Female sepals not fleshy; female flowers few or solitary:—

Male flowers racemose, bracts minute; female sepals very short

867. **Taxotrophis.**

Male flowers subcapitate :—

Bracts of male flowers many, large; female sepals foliaceous

868. **Phyllochlamys.**

Bracts of male flowers 2; female sepals coriaceous, clasping the ovary.....869. **Streblus.**

Anthers in bud erect; style undivided or 2-fid; climbing shrubs:—[p. 160]

Ovule erect, orthotropous; stipules connate, intrapetiolar

870. **Conocephalus.**

Ovule pendulous, anatropous; stipules lateral, small.....872. **Cudrania.**

Class XXIII. POLYGAMIA.

[Plants having polygamous flowers, which therefore belong to this class, have been distributed among the other classes according to the nature of their hermaphrodite flowers.]

Class XXIY. CRYPTOGAMIA.

•A aquatic, more or less submerged or floating herbs :—[pp 162]

Plants growing at sides or in depths of pools or sluggish streams:— [IV- 162]

fronds pinnatisect, dimorphic; sori on veins running longitudinally down the fertile pinnae parallel to both midrib and edge

1134. **Ceratopteris.**

Fronds longpetioled, with 4 terminal obcordate to cuneate sori in closed conceptacles..... 155. ^{ents;} ^{gile a.} ^{mps'---}

Plants floating on the surface of ponds and rice-field swamps [p. 161]

Fronds entire, with complicated anastomosing venation..... 153. **Salvinia.**

Fronds small, deeply lobed, each lobe 1-nerved only... 154. **Azolla.**

•Terrestrial or epiphytic herbs:—[p. 161]

Leaves very small in proportion to the stem, or absent:—

Stem articulate, simple or with whorled branches; leaves to rings of teeth at the nodes; sori on underside of petioles making a terminal cone-like fructification; erect in bud..... 1150. **Equisetum.**

Stem not articulate, simple or dichotomously branched; whorled; circinate in bud; sori in axils of bracts or leaves scattered along stems or aggregated in terminal cone-like fructifications:—

Sporangia of 2 sorts, one with large spores, one with numerous small spores; leaves usually 4-stichous and rarely uniform... **U**..... **Jost**

Sporangia all of one sort with many small spores; leaves always uniform and usually multifarious:—

Leaves many, crowded; sporangia orbicular, 1-celled, 2-valved..... 1157. **Lotus.**

Leaves few, distant, rudimentary; sporangia turbinate, 3-valved..... 1158. **Psidium.**

Leaves (fronds) very large in proportion to the stem or rootstock, never articulate:—

Fronds erect in bud, divided more or less deeply into a fertile barren portion:—

Sterile portion of frond simple or, rarely, palmately lobed..... 1151. **Ophioglossum.**

Sterile portion of frond digitate..... 1152. **Helminthostachyus.**

Fronds circinate in bud:—

Sporangia opening by a lateral slit or an apical pore but without any ring; sori dorsal or marginal:—

Sporangia sessile, contiguous but discrete, arranged in a row near the edge of the pinnae; fronds 2-pinnate, veins free..... 1149. **Angiopteris.**

Sporangia concrete in raised circular dorsal masses with a central point; fronds palmate, veins anastomosing... 1150. **Kaulfussia.**

Sporangia provided with a more or less elastic ring:—

Ring of sporangia opercular, complete, the sporangia opening down the side ; sori lateral:—

Tufted ferns with simple or forked fronds

1147. *Schizaea*.

Climbing ferns with palmate, pinnatifid or pinnate fronds

1148. *Lygodium*.

Ring of sporangia equatorial:—

Ring of sporangia broad, complete, transverse; sporangia opening vertically ; sori with few sporangia, dorsal, indusium 0; climbing ferns with dichotomously branching fronds ^

1125. *Gleichenia*.

Ring of sporangia more or less complete, jointed, vertical; sporangia usually bursting transversely; sori with many sporangia, dorsal or marginal:—

Trees; sori without an indusium.....H26- *Alsophila*.

Herbs:—

tSori furnished with an indusium :—[p. 164]

Fronds delicately membranous, transparent; indusium apical on a vein, tubular.....H27- *Trichomanes*.

Fronds herbaceous or coriaceous, opaque:—

tSori marginal or submarginal:—[p. 164]

Indusium opening apically towards edge of frond:—

Sori discrete: indusium apical or subapical on a vein »
1128. *Dayallia*.

Sori in a continuous or subcontinuous marginal or submarginal line; indusium double, the inner valve membranous.U29. L * *

Indusium opening inwardly towards middle of frond; sporangia on the underside of the indusium, which consists of the intucked margin of the frond.....1130. *Adiantum*.

Sporangia not on the underside of the indusium; the veins supporting the sori or their receptacles passing from midrib to margin:—

- Sori terminal or nearly so, on distinct veins, globose and, at least at first, discrete

1131. *Cheilanthes*⁸.

Sori on a slender filiform receptacle on the sides of the indusium, connecting several to many veins, linear and continuous:—

Segments of fronds very small and narrow
 the receptacle connecting the apices
 veins.....1132. **Onychium**
 Segments of fronds conspicuous,
 Receptacle connecting the apices of many
 1133. **Terrestrial**

Sori remote from margin of frond:—[p. 163]

Indusium linear or oblong :—

Fronds simple or variously once or
 pinnate:—
 Indusium membranous, parallel and
 and opening towards midrib 1135. **Belone**
 Indusium divergent from midrib, single
 opening towards midrib, or double and
 opening both towards midrib and margin of

1136. Asplenium

Fronds palmately flabellate 1137. **Actinopteris**

Indusium reniform:—

Pinnæ, mostly divided, not articulate nor
 dotted above.....1138. **Nephrodium**
 Pinnæ always simple, articulate at base,
 white-retaceous dots above.....1139. **Mnium**

Sori without an indusium :—[p. 163]

Sori on back of lobes confined to the veins :—

Sori round or very slightly oblong
 1140. **Polypodium**

Sori linear:—

Veins not all soriferous:—
 Sori distributed generally on soriferous veins
 Sori on the main-veins only

1141. Gymnogramma

Sori on the transverse connecting vein
 only.....1142. **Meniscium**

Sori circumscribed to a marginal or submarginal
 line parallel to midrib and margin of fronds
 Fronds all similar, grassy.....1143. **Yittan**

Fronds dimorphic.....1144. **Drymoglossum**
 Veins freely anastomosing, all soriferous

1145. Hemianthis

Sori not confined to the veins, but spread over
 whole under-surface of the frond... 1146. **Acrostichum**

INDIAN BOTANIC GARDEN,
S1BPUR, CALCUTTA.

XI. SUMMARY OF THE NATURAL SYSTEM.

SYNOPSIS OF THE CHIEF SUBDIVISIONS.

Plants bearing flowers with stamens or pistils or both; pistils bearing ovules that at may ultimately change into embryonate seeds

PHANEROGAMIA.

Pistils with a stigma; ovules contained in an ovary composed of a carpel with cohering edges or of two or more cohering carpels; perianth usually present. ANGIOSPERMIA.

First leaves of embryo solitary or alternate; framework of leaves parallel-longitudinal or, less often, parallel-divergent, rarely netted veins; perianth usually 3-merous; woody substance of stem in isolated bundles. MONOCOTYLEDONES VI.

First leaves of embryo two and opposite; framework of leaves usually of netted veins; perianth usually 4-merous or, more often, 5-merous; woody substance of stem usually in rings of bundles round a central pith. DICOTYLEDONES.

Corolla usually and calyx almost always present; flowers generally hermaphrodite :—

Segments of corolla almost always and of calyx very often coherent, corolla rarely absent; stamens almost always definite, usually adherent to corolla, sometimes hypogynous, rarely epigynous; ovary inferior, or if superior the carpels not more than 3

* COROLLIFLORA III.

Segments of corolla almost always free, frequently some or all of them absent; stamens often indefinite :—

Stamens epigynous or perigynous arising from calyx or from a disk lining its tube, if epipetalous (CRASSULACEAE sometimes) the ovary superior and carpels more than 3; segments of calyx usually united. CALYCIFLORA II.

Stamens hypogynous arising apart from calyx direct from the receptacle or from a disk that crowns the pedicel; segments of calyx usually free. THALAMIFLORA I.

Corolla almost always and calyx often absent; flowers generally 1 sexual. PINNACULATE IV.

Pistils without a stigma; ovules borne on an ovary composed of an open carpel; Perianth almost always absent; first leaves of embryo two opposite < more than two and whole of stem of bundles round a central pith. GYMNOSPERMIA v.

Without flowers, bearing antheridia or archegonia or both on thalium in one stage of existence and bearing small spores in alternating stages PROTALIA I.

Leaves small in proportion to the stem, the fertile ones almost confined to a particular region :—

Leaves in whorls, the fertile ones peltate, forming a spiral apex of the stem bearing sporangia on their inner surfaces

EQUISETACEAE

Leaves not in whorls, the fertile ones flat, with axils

Leaves large in proportion to the stem, the fertile ones not confined to a particular region :—

Leaves bearing sporangia on their upper surfaces

RHIZOMORPHACEAE

Leaves bearing sporangia on their lower surfaces

PHANEOGAMIA.—Exceptions mainly teratological; certain flowers (Green Rose" of gardens) both these whorls replaced by leafy organs; flowers may have no proper stamens, these being replaced by petals, (Musa, &c.) may have no pips owing to ovules not developing into seeds.

ANGIOSPERMIA.—Carpels open and young seeds naked from an embryo in some species [Sterculia colorata, &c), but stigma present, and carpels fertilization. Partial or complete absence of perianth is noted in subdivisions.

MONOCOTYLEDONES.—Parallel-divergent veins in many SCITAMINEAE; PALMES; the character is, however, associated with 3-merous perianth. Netted-venation characterises most AROIDEAE, but is associated with spirals in the leaves of Tacca, Dioscorea, and Smilax; the diagnostic marks under the 3-raeous Dicotyledons. Perianth more or less incomplete in TYPHACEAE, NAIADACEAE, LERINACEAE, ERIOCAULEAE, CYPERACEAE, GBA-

AROIDEAE, some HYDROCHARITACEAE.

DICOTYLEDONES.—Parallel-divergent veins in leaves of some TACEAE, and UTTICACEAE; but without 3-merous perianth. The 8-merous perianth are met with in MENISPERMACEAE, ANONACEAE, MAGNOLIACEAE, VERACEAE (Argemone), all distinguished from Tacca, Dioscorea, and Smilax by 9 or more perianth-segments in place of 6, or if (ANONACEAE sometimes) 6 by having carpels free; also in some EUPHORBACEAE, distinguished by 3 perianth-lobes in place of 6; finally in MELIACEAE (Amoora), MELASTOMACEAE and EBENACEAE (Maba). Amoora differs from Tacca and Smilax in having the leaves leaven, and from the species of Dioscorea with compound leaves in having pinnate not digitate. Sonerila differs from Smilax and Dioscorea in having flowers, from Tacca in having a 3-locular ovary. Maba differs from Tacca in having 1-sexual flowers, from Dioscorea in having the ovary superior, from Smilax the corolla unlike the calyx and gamophyllous.

COROLLIFLORAE.—Corolla may be absent in OLEACEAE (Olea); petals in OLEACEAE (Olea), SALVADORACEAE (Azima), STYRACEAE; stamens are in STYRACEAE; and sometimes in EBKINACEAE.

CALYCIFLORAE.—Calyx-tube very short or sepals free in some LEGUMINOSACEAE, SAMYDACEAE, FICOIDEAE. Petals absent in some LEGUMINOSACEAE, ROSACEAE, BBKTAORX, LYTHRACEAE, DATISCEAE, SAMYDACEAE, FICOIDEAE.

THALAMIFLORAE.—Thalamus like a calyx-tube in most NYMPHAEACEAE, distinct in Portulaca. Petals more or less united at base in TERNSTRAMIACEAE, TAMARISCINEAE, OLACINEAE, IUCIKBJE, & C; absent at times in RANUNCULACEAE, BIXINKEAE, STERCUARIAE, SAPINDACEAE, OLACINEAE, RHAMNACEAE, CRUCIFERAE, CARYOPHYLLACEAE, & C.

INCOMPLETE.—Petals occasionally present in EUPHORBACEAE; perianth in BEAULTIAE, JATEACEAE; calyx and corolla distinct in Loranthus.

PERIANTH.—Perianth occurs in flowers of Gnetum. Selaginella, prEKXDOIHYA.—In Eguiaetum, Lycopodium, and some species of the fertile organs are aggregated in a conical mass simulating an inflorescence; certain FILICES also (Ophioglossum, Helminthoatachya, Acrostichum, &c), the limits of sporangia to definite fronds gives rise to a similar appearance.

Sepals deciduous:—

Carpels when ripe usually quite free; if partially coherent (Nigella) the ovules arising from the ventral sutures of closed carpels. I. Ranuncula

Carpels coherent in a 1-locular ovary with parietal (BixiNEIE sometimes) intruded placentae:—

Fruit either a 2-valved sessile or stipitate capsule with a replum and with marginal placentas, or a separated from the torus by a long gynophore; whorls 4-merous; embryo small at the base of albumen. XI. Cappft

Fruit either fleshy and sessile, or a capsule with marginal placentae; embryo considerable, near middle of

XIII. Bixi

Sepals persistent:—

Leaves alternate; trees or shrubs:—

Stamens quite free from the petals;

Pistil of 1-many carpels distinct or cohering in the of the flowers; styles quite free throughout, or subdorsal; disk 0; carpels more than 1-ovuled

II. Dillenia

Pistil deeply lobed, lobes oblique, embedded in accrescent disk; styles connate central; loculi 1-

XXXII. Onnace

Stamens attached to the bases of and deciduous the petals. XXI. Ternstrcmia

Leaves opposite:—

Flowers almost always 1-sexual or polygamous, if 5-merous with resinous juice; leaves coriaceous gland-dotted. XX. Guttifer

Flowers hermaphrodite, 5-merous; leaves herbaceous gland-dotted. XIX. Hypericium

Stamens definite, 10 or fewer:— [p. 167]

Flowers usually 3-merous, if 2-merous (some MENIBPE then 1-sexual; carpels free or solitary; stamens 6 free equal opposite the petals; leaves alternate:—

Flowers minute 1-; scandent herbs or shrubs; seeds usually reniform; carpels 3. V. Menispermace

Flowers (in our species) hermaphrodite; erect shrubs; anther dehiscing by 2 valves; carpel solitary. VI. Berberide

Flowers 4-; 5-~ 8 (see also in FuiUBiAc* only 2):—

in 4 with stamens 6; placentas 2 parietal, fruit a capsul

with 2 valves or a small indehiscent nutlet; herbs with alternate leaves; sepals deciduous :—

Sepals 4; stamens free in 2 rows, an inner with \ longer and an outer with 2 shorter filaments; petals similar, their limbs cruciformly set; fruit with a partition (replum) stretched from placenta to placenta^x- **Crucifer***.

Sepals 2; stamens united in two bundles of 3 each; petals irregular in 2 dissimilar pairs; fruit without a replum

IX. Fumariaceae.

Petals usually 5, sometimes 4, with perfect stamens as many or twice as many as petals and sepals (anisomerous in all POLYGALACKIE and some SAPINDACE^):—

Ovary 1-celled; sepals usually persistent; stamens and petals isomerous:—

Placentas 3, parietal; stamens as many as sepals ; petals often irregular; leaves alternate rarely opposite

XII. Yiolaceae.

Placentas free central; stamens usually twice as many as sepals; petals regular:—

Leaves herbaceous, always opposite; sepals united below or free; petals free, sometimes 0; herbs

XV. Caryophyllaceae.

Leaves scale-like minute, alternate; sepals free; petals slightly connate below; shrubs . . XVII. Tamariscine*.

Ovary 2- or more-celled; if 1-celled (POLYGALACEE; *Xanthophyllum*, *Securidaca*) the flower not isomerous:—

Seeds many attached to inner angles of cells of fruit; flowers regular 3-5-merous with carpels as many as sepals; small diffuse plants with simple opposite stipulate leaves

XVIII. Elatmeae.

Seeds 1, less often 2 to each cell of fruit and either erect or pendulous; if more than two and attached to inner angle of cells (GERANIACE*; : *Oxalidece* and *Iwpatjem*) then either with regular flowers and alternate digitate or pinnate leaves (*Ozalis*, *Biophytum*, *Averrhoa*) or with opposite or alternate simple leaves and irregular flowers.

*Seeds pendulous:—[p. 170]

Flowers usually anisomerous (sepals 5, stamens 8. subsomerous in *Salomonina*) filaments connate in ^ sheath usually adnate to petals; sepals and petals generally irregular; ovary 1-2-locular; leaves simple alternate; disk 0 [p. 170]. . . . XIV. ro y6

ftFlowers isomerous; disk usually present:— [P* 169]
 Leaves compound opposite; stamens quite free;
 stamens always 10. . . . XXVIII. **Zygophyll**^{aC} [®] ^Λ
 Leaves simple, or if compound alternate; sta^{me}
 more or less united :—

Ovules in each carpel 2 collateral; cells of caps^{la^r}
 fruit 2-chambered, chambers each 1-seeded; ^{Iea} ^v [^]
 always alternate simple; stamens always 5; P^e ^{tals}
 and sepals always regular. . . . XXVI. ^r ^B ^{ca.}

Ovules in each carpel 2 with stamens 10 ^{ft} ^{no}
 regular perianth; if more than two with reg^{ular}
 perianth and stamens 10 and compound alter^{nate}
 leaves, or irregular perianth stamens 5 with con^{nate}
 anthers and simple leaves ..XXIX. ^{erania} ^C ^{*se.}

**Seeds erect; flowers isomerous or anisomerous; le^{av} ^{eg}
 usually alternate even-pinnate rarely simple or digi^{tately}
 compound, more rarely opposite and odd-pinnate; ^{seed}
 often arillate [p. 169]. XLI. **Sapindace**^{*}

fSepals more or less united at the base:—[p. 167]

Stamens indefinite; petals contorted; calyx-lobes often enlarg^{ed} ^{*n}
 fruit; trees or climbing shrubs with resinous sap; leaves altern^{ite}
 simple not gland-dotted; calyx-lobes and petals 5

XXII. **Dipterocarpei**^{*}

Stamens definite (12 or fewer); if indefinite (RUTACE[^]E: *Citr^u* ^s ^{>>}
Mgle) the leaves gland-dotted:—

Leaves pellucidly gland-dotted; simple or compound, opposite ^{or}
 alternate; calyx-lobes and petals 4-5; stamens inserted outsi^{de}
 the prominent disk ; petals often valvate. XXX. **Rute**^{**}

Leaves not gland-dotted:—

Leaves opposite simple; calyx-lobes and petals 5, stamens ¹⁰ ^{*}
 disk obscure ; ovary 3-celled, cells 1-ovuled ^{w>>}

XXVII. **Malpighiaceae**.

Leaves alternate; if opposite (CELASTRINE;E : *Salacia*, *Hippo*
cratea) the disk large, or (OLACINE;E : *lodes*) the ovary 1-celled :--
 t Carpels syncarpous septate, or apocarpous; ovules few, P^{en}
 dulous erect or ascending:—[p. 171]

JJStamens alternate with the petals:—[p. 171]

§Ovules and seeds pendulous :— [p. 171]

ITLeaves compound:— [p. 171]

Filaments free; fruit drupaceous indehiscent; leaflets
 opposite. XXXI. **Simarubif**^{*}

Filaments united in a tube; if free (*Cedrela*) fruit

capsular.orif fruit drupaceous (Walsura) then the
leaflets alternate XXXIV. Meliaceæ.

^Leaves simple:—[p. 170]

Petals 2-lobed, imbricate; raphe of seed ^1
XXXV. Chailletiacæ-

Petals entire; raphe of seed dorsal:—

Petals usually valvate, fruit ^ 1-seeded
I. Olacineæ.

Petals imbricate, fruit of 3-5 ^ d pyrenes
II. Illicineæ.

§Ovules and seeds erect or ascending:—fp- 170]

Ovary 3-5-locular, leaves ^ g ^ CelMtrineIB.

Ovary 1-locular, leaves simple or compound, ^ or 2-5-
loocular, leaves compound ... -XLIII. & TM«*to***

UStamens opposite petals; leaves simple or com-
pound:—[p. 170]

Petals valvate; leaves usually stipulate ^ ^ ^

Petals imbricate; leaves without ^ sti P ^ n SaWacelB.

§§Carpels syncarpous 1-locular, placenta 3, parietali with
numerous ovules; disk large lining calyx ^ ube ^ ave ^ -
pinn [p. 70] X V. in .

*Sepals valvate t bud! ^ 7 H imbricacae 'or' Vubimbricacae then always »MJ
valvate petals and eithel. (ANONACE ^: some Polyalthat ^ l ^ Z
2-sexual flowera or (TrLUCE*: some EUeocarpi) with anthers dehiscing
tr ansverely, or (BORSEBACIE: Bursera) with balsaminous sap: - [P-1 ^ I
Sepals free; flowers 3-merous, stamens free, indefinite; P ^ i !

free or rarely {Anona) conjoined. IV Ar > then
Sepals united below; if free (TMACE ^: Grev,i», TnunfeUa) then
flowers not 3-merous; flowers 5-merous or 4-merous:

^ [Stamens monadelphous:—[p. 172]

Stamens indefinite (in Eriodendron only 5-7) in a coi u mn round
the style with only short free filaments towards apex, i vid'
upwards into phalanges opposite the petals; ultimate n inner
with anthers Mocular (2-locular in Eriodendron ^ and te leaves
series of filaments in JJowftai, then with compound dig"* corolla-
and petals); staminal column adnate at base to contortee except ^
lobes; often an epicalyx of bracts below e a l ^ n * MaWac e * .
Eriodendron and Bombax simp'e. I
Stamens definite or subdefinite in a, column or cup

with mouth of tube usually with 5 sterile prolongations^{^ ^ . g},
 the petals, the intervening sinuses bearing 1-5 2-loc^{ular},
 sometimes (*Eriolcena*) in a column round style with free
 filaments from middle upwards, then with anthers²⁻¹
 leaves simple, sometimes compound-digitate, and the^{n with ^ Q}
 petals. XALY. O ^
 Stamens free or (TILIACE*: rarely) filaments slightly con^{natei n*}
 ring or shortly 3-5-adelphous at the base; anthers 2-locular: ^{17 ^}
 Stamens indefinite or if subdefinite (*Triumfetta*, *Corchorus*)
 twice as many as petals; leaves entire or lobed always^{simple,}
 trees, shrubs or herbs. XXV. **Tiliac**

Stamens always definite:—

Stamens usually twice as many, rarely only as many^{as -netffl⁹}
 if isomerous then alternate with petals and quite free^{. JevVES}
 compound unequally pinnate ; trees with balsamiferous^{sap}

XXXIII. **Burserace**[^]

Stamens as many as and always opposite the petals^{t ls whi}
 usually are hooded over the anthers and are adnate to^{filam^{ents}}
 at their insertion ; trees or shrubs, often climbing, rare^{l herbs;}
 leaves always simple. XXXIX. **Rna**^{mnac[#]}

II. CALYCIFLORJE.

•Stems herbaceous or woody, or if fleshy (FICOIDE[^] : *Sesuvium**)[^] ^{ea}
 GONIACEE; CRASSULACE[^]) not flattened or articulated; leaves^{ea}

tinct:-[p. 175]

+Ovary apocarpous with 1 or more than one carpel; or syncarp^{oousw^{itb}}
 several completely closed loculi; if ovary syncarpous 1-celle^{d (SAXI-}

FRAGACE^B : *Vahlia*) the placentas not parietal:—[p. 174]

Ovules arising from the inner angles or from bases of carp^{els or}
 loculi, or if arising from apex of loculus (SAXIFRAGACE[^] : *ya*^{hlia})
 then with ovules very many:—[p. 174]

Carpels solitary, excentric, style terminal; flowers irregular^{wi⁻^}
 definite often diadelphous stamens, or regular with generallyⁱⁿ⁻
 definite stamens; ovules many or few arising from inner^{gle}
 of carpel; calyx with odd sepal nearest axis; leaves &^{ost}
 always stipulate. XLVI. **Legumino**^{see.}

Carpels several or if solitary either (some ROSACE^E) with^{style}
 not terminal and with odd sepal remote from axis or (some C^{ON-}
 NARACE^E) with ovules basilar and with exstipulate leaves:—

§Flowers hermaphrodite:—[p. 173]

- Carpels free, or if ultimately united, with styles distinct :—
 Stamens indefinite; leaves stipulate ; carpels many free or often ultimately united, not seldom carpel 1; ovules usually 2 from inner angle of cell; style not terminal; odd sepal remote from axis. XLVII. **Rosacea.**
- Stamens definite; leaves not stipulate:—
 Carpels quite free; fruits follicular :—
 Ovules 2 arising from base of carpels which are often fewer in number than lobes of calyx ; shrubs or trees, leaves alternate. XLV. **Connaraceae.**
 Ovules very many arising from inner angles of carpels which always are as many as calyx-lobes; herbs with opposite succulent leaves and stems XLIX. **Crassulaceae.**
- Carpels with free styles but elsewhere united; fruits capsular ; leaves opposite; seeds many; herbs :—
 Seeds with straight embryo in centre of albumen; ovules (*Vahlia*) from placentas suspended from top of a 1-locular ovary. XLVIII. **Saxifragacea*.**
 Seeds with curved embryo enclosing albumen ; ovules from inner angle or from base of loculi
 LXV. **Ficoideae.**
- Carpels and styles united throughout; stipules 0 :—
 Calyx-lobes imbricate; trees or shrubs :—
 Stamens indefinite; petals imbricate; anthers opening by slits; leaves usually opposite and gland-dotted
 LIV. **Myrtaceae.**
- Stamens definite; petals valvate; anthers opening usually by pores; leaves opposite not dotted, usually 3-5-nerved from base. LV. **Melastomaceae.**
- Calyx-lobes valvate ; stamens definite, rarely indefinite :—
 Ovary free from calyx-tube; petals usually corrugated; aquatic herbs, or trees or shrubs; if ovary adnate to calyx-tube (*Punicea*) then stamens indefinite I/VI. **Lythraceae.**
 Ovary adnate or semi-adnate to calyx-tube with stamens definite; marsh or aquatic herbs....LVII. **Onagraceae.**
- §Flowers 1-sexual; ovary inferior:—[p. 172]
 Flowers symmetrical; stamens definite, usually three with corrugated anthers; styles united or only free at apex; placentas confluent in axis of ovary; climbing, tendril-bearing herbs and shrubs. LXI. **Cucurbitaceae.**
 Flowers not symmetrical; stamens numerous, free or conjoined, anthers ovoid; placentas projecting from inner angle

into carpellary chamber; styles free or only united at base; herbs or shrubs with more or less succulent leaves and stems. LXII. **Begoniace***
 {Ovules suspended from apices of carpels or loculi; ovaries always inferior, usually more than 1-locular; ovules a few:—[p. 172]

Ovules more than one in each loculus, the flowers hermaphrodite; or if ovules in each loculus solitary, the flowers 1-sexual:—

Aquatic submerged herbs with 1-sexual flowers; styles usually 4, free; ovules solitary; stamens definite; leaves whorled

LI. **Halorage***

Terrestrial, or if aquatic not submerged, trees and shrubs; hermaphrodite or rarely (*Gyrocarpus*) 1-sexual flowers; styles united; ovules (except *Gyrocarpus*) more than one:—

Ovary 2-6-locular; maritime species (except *Camilla*) opposite. LII. **Rhizophorace***

Ovary 1-locular; land species (except *Lumnitzera*) opposite or alternate. LIU. **(Jombretace****

Ovules solitary in each loculus, the flowers hermaphrodite; terrestrial herbs, trees and shrubs:—

Flowers in axillary cymes or fascicles; fruit drupaceous with a 1-2-celled stone; trees or shrubs with simple opposite or alternate almost entire leaves; stipules 0. LXVIII. **Cornace****

Flowers in umbels; leaves almost always alternate, compound or if simple usually deeply lobed; stipulate:—

Trees or shrubs; fruit usually somewhat fleshy; carpels generally more than two, without glandular vittae, and never separating spontaneously. LXVII. **Araliace****

Herbs; fruit dry separating spontaneously into two dry dehiscent carpels with usually glandular vittae containing an essential oil. LXVI. **Umbellifer*-**

†Ovary 1-locular, with 3-5 parietal placentas with many ovules, from calyx, occasionally half-inferior [*Waldmannia*]; styles usually distinct (more or less united in **SAMYDACEÆ**: *Casearia*; and in **PASSIFLOREÆ**); lobes of calyx, petals and stamens definite; flowers regular:— [p. 172]

§Flowers hermaphrodite or if 1-sexual (**PASSIFLOREÆ**: *Carica*) with ovary superior:— [p. 175]

¶Herbs of small size, the leaves beset with glandular hairs; styles quite distinct [p. 175] L. **Droseraceæ.**

Shrubs erect or climbing, or trees, without glandular hairs [p. 174]

owers with a distinct corona between petals and stamens; Ambers with tendrils or {Carica} trees with 1-sexual flowers and superior ovary; styles united at least below LX. Passiflore*, lowers without a distinct corona between the petals and stamens:—

Sepals and petals dissimilar; styles altogether free; shrubs

LIX. Turneraceae.

Sepals and petals similar or nearly so; styles united at base or free; trees LVIII. Samydaceae.

Flowers Asexual or polygamous, with ovary inferior; segments of perianth minute; styles distinct often 2-partite; leaves alternate without stipules; trees [p. 174]. LXIII. Datisce*.

Stems fleshy, flat and articulate; leaves minute; flowers large hermaphrodite; calyx adnate to ovary; lobes of calyx, petals and stamens more or less radiating at tips, united below; ovary syncarpous, monocarpous, with parietal placentas [p. 172]. LXIV. Cactace*.

HI. COROLLIFLORII.

Ovary inferior; stamens equal in number to, rarely fewer than, and anthers alternate ***», lobes of corolla; flowers regular or, less often, irregular; fruit never of two elongated follicles:— [p. 17G]

Stamens attached to the corolla, equal in number with its lobes:—

Anthers free; ovary 2-many-locular, chambers 1-many-ovuled; seeds usually with copious albumen; calyx-limb toothed, lobed or partite; leaves opposite:—

Stipules absent or if present lateral LXIX. Caprifoliaceae.

Stipules present, inter- or intrapetiolar, or leaflike and whorled with their leaves; flowers sometimes in heads without involucre

LXX. Rubiaceae.

Anthers connate > syngenesious; ovary 1-locular, 1-ovuled; seeds without albumen; calyx-limb reduced to a pappus or obsolete; flowers usually in heads surrounded by an involucre; leaves usually alternate LXXI. Composite.

Stamens free from the corolla; ovary 2-10-locular, chambers usually many-ovuled:—

Stamens 5, as many as the equal or unequal corolla-lobes, the filaments free from the style; ovary with 2-5, rarely 6-10 placenta or loculi, ovules many [p. 176]. LXXIII. Caropaulaceae.

Stamens 2, fewer than the unequal corolla-lobes, the ^{filaments} united in a column along with the style ; ovary 2-locular, ^{chamber} many-ovuled [p. 175]. LXXII-^{Stylobes.}

•Ovary superior, or if inferior then (VACCINIACEAE ; most STYBACEAE*), ^{only as} stamens more numerous than corolla-lobes; if with stamens ^{Mesa} many as corolla-lobes and ovary inferior then either (MYRSINACEAE[^] ; [^] with stamens opposite corolla-lobes, or if (APOCYNACEAE occasionally; [^] stamens isomerous and alternate with corolla-lobes but ovary inferior [^] carpels 2 and fruit of 2 elongated follicles, if inferior with stamens [^] numerous than corolla-lobes (GESNERACEAE[^]) then corolla irregular th 2-locular many-ovuled ovary, or if ovary imperfectly 2-locular the filament not united in a column with the style:— [p. 175]

Ovary 1-locular, with a free-central placenta ; stamens (except ^{plull.} *Fragaria*) epipetalous:—

Stamens equal in number to and opposite the lobes of the ^u regular corolla:—

Ovary 1-ovuled ; styles or style-branches 5
LXXV. **Plumbaginaceae.**

Ovary 2-many-ovuled ; style undivided :—
Fruit capsular; herbs LXXVI. **Primulaceae.**

Fruit indehiscent; trees or shrubs LXXVII. **Myrsinaceae.**
Stamens 2, alternate with the three anterior lobes of the ^{irregular} corolla XCIV. **Lentibulariaceae.**

Ovary 2-many-, rarely 1-locular, placentas axial or less often parietal ¹ never free-central:—

Stamens free from the corolla and usually more numerous than ^{its} lobes ; trees or shrubs :—

Flowers hermaphrodite ; ovary inferior or half-inferior; ^{stamens} twice as many as corolla-lobes ; style simple; ovules in ^{each} chamber many. LXXIV. **Yacciniaceae*'**

Flowers dioecious; ovary superior; stamens equal to and ^{opposite} or twice as many as corolla-lobes or more; styles 2-8; ^{ovules} always twice as many as styles, either two in each undivided ^{locus} locus, or solitary in each compartment or subdivided loculi

LXXIX. **Ebenaceae*'**

Stamens attached to the corolla :—
Ovary 3- or more-carpelled, or if 2-carpelled (some SAPOTACEAE[^]) with stamens either equal to and opposite or more numerous than the corolla-lobes; flowers hermaphrodite; style simple trees or shrubs:— [p. 177]

•Ovary superior; ovules in each chamber solitary [p. 177]
LXXVIII. Sapotaceae*'

**Ovary inferior or half-inferior or at least partially attached to calyx-tube; ovules in each chamber 2 or more [p. 176]

LXXX. **Styraceae.**

†Ovary 2-carpelled, or if 3-5-carpelled (POLEMONIACE/E; some CONVULVACE* and some VERBENACE^*) with stamens either equal to or alternate with, or fewer than the corolla-lobes:—[p. 176]

•Corolla regular, rarely slightly oblique; stamens as many as or alternate with corolla-lobes, or if oblique or irregular and perfect stamens fewer than corolla-lobes (SOANACE/E: *Browallia*; JANTUNACE/E: *Camcova*) the corolla-lobes imbricate or subconnorted; if stamens fewer than corolla-lobes and corolla regular (OISACKa) then stamens alternate with carpels:— [p. 179]

leaves opposite or if alternate (APOCYNACE/E: *Thevetia*, *Cerber*<*, *Plumeria*; GENTIANACE*: *Limwmthmmm*) then either (*Cerbera*, *Plumeria*) with carpels free and only styles united, or if carpels united then (*Thevetia*) with a ring of hairy scales in corolla throat hiding the stamens, or (*Livianthemum*) floating aquatic plants with 1-locular ovaries:—[p. 178]

Stamens 2, alternate with the carpels; corolla-lobes 4-5 or more, imbricate or valvate; ovary 2-locular, each chamber 2-ovuled or, rarely, 1- or 4- or 8-ovuled; stipules 0

LXXXL **Oleaceae.**

Stamens 4 or more, alternate with corolla-lobes:—

Corolla-lobes or free petals and stamens 4, segments of corolla imbricate; ovary 1-locular, 1-ovuled or 2-locular, each chamber 2-ovuled; rudimentary stipules usually present. LXXXII. **Salyadoraceae.**

Corolla-lobes or free petals 5, rarely many or, if 4 (LOGANIACE/E and GENTIANACE/E sometimes) the chambers of the 2-locular, less frequently 1-locular ovary many-ovuled:—

U Carpels free, only the styles united or if carpels also united (APOCYNACE*: sometimes) the corolla with lobes contorted and twisted to the left; style more or less enlarged towards the top with its stigmatic surface below the tip; stamens and corolla-lobes always 5:— [P- "8]

§§Pollen granular; stigma annular or ^{inter^pt^} below the smooth non-stigmatic entire or 2-nd ^{free} of style; fruit berry-like or drupaceous or of two follicles; ovules sometimes few (1-6) in each chamber, usually many; stipules 0, or rarely ^{re^p^ie} by ^{interpetiolar glands or} ^{h ^ 5 / nac i,}

§§Pollen aggregated in solitary or paired masses (pollinia) in each anther-cell; apex of style flattened into a plane or beaked disk with stigmatic *horde* bearing 5 glands (corpuscles) to which the pollinia are attached in pairs or fours; stipules ^{awa} absent; fruit usually of 2 free follicles [p. 177]

LXXXIV. **Asclepiade***

•[Carpels as well as styles always united; stigma ^r terminal; corolla-lobes imbricate or valvate or, if contorted (LOGANIACE/E : *Fagraea*; GENTIANACE^: except *Gansctf* and *Limnanthemum*), then twisted to the right; stamens and corolla-lobes 4-5, occasionally many:—O¹⁷⁷^

Leaves joined at bases by interpetiolar stipules^{es} raised horizontal lines, always opposite; ovary ^o locular; corolla-lobes valvate or imbricate, or ^{if} contorted (*Fagraea*) corolla long tubular and P^{lft} centas2-fid LXXXV. **Loganiace****

Leaves without even rudimentary stipules; ovary 1* locular or if 2-locular (*Exacum*) with corolla short rotate and placentas simple; corolla-lobes contorted or if valvate (*Limnanthemum*) the leaves alternate

LXXXVI. **Gentianacefle***

§Leaves alternate or if opposite (POLEMONIACE,E : *Phlox*) the pistil 3-merous; carpels never free; stamens never hidden by a ring of scales; if aquatic floating herbs (CONVOLVULACE^ : one *Ipomcca*) the ovary more than 1-locular:— [p. 177]

Carpels 3, and ovary 3-locular, styles simple shortly 3-fid; corolla-lobes contorted; ovules in each loculus few attached to inner angle of loculus; capsule loculicidally dehiscent

LXXXVII. **Polemoniace***

Carpels 2 or if 3 (HYDROPHYLLACE* : *Hydrolea* sometimes) with corolla-lobes imbricate and ovules in each loculus numerous, or if 3-5 (certain CONVOLVDLACE^) with corolla plicate and ovules in each loculus 1-4 erect from the base of the loculus:—

**Ovules in each carpel numerous and ovary 2-locular rarely (HYDROPHYLLACE^: *Hydrolea*) 3-locular; if few (some HYDBOPHYLLACEJE) then with ovary 1-locular or if (rarely) ovary 2-locular and ovules few the fruit capsular but the seeds not arising from the carpel-base:- f_p 179]

TT^corolla-lobes imbricate or if (rBrely) contorted the

IT/Jl "0t 2-10cularJ froi* always capsular; style 2-fid or styles 2 [p. 179] LXXX VIII. **Hydrophyllace***

ttCorolla-lobes plicate or if (rarely) imbricate the style entire [p. 178]. XCI. **Bolanace***,
 **Ovules in each carpel 2, less often 1, rarely 4:— [p. iroj
 Corolla-lobes imbricate or contorted; ovary 2-locular
 loculi 2-ovuled, or spuriously 4-locular loculi 1-ovuled;
 fruit of 2 1-2-seeded pyrenes or 4 1-seeded indehiscent
 nutlets ; embryo with radicle superior

LXXXIX. **Boragineae.**

Corolla-lobes plicate or rarely (*Cressa, Cuscuta*) imbricate and then with fruit a valvular or circumscissile capsule; ovary usually 2-, rarely 3-5-locular; fruit usually dehiscent; seeds erect; if fruit indehiscent, embryo with radicle inferiorXC. **ConYoWulaceas.**

JCorolla irregular, or at least somewhat oblique, its lobes overlapping; uppermost stamen if present smaller than the others, often reduced to a staminode without anther or altogether absent; if corolla regular with ovules 1-2 in each ovary and fruit indehiscent (some VERBENACE*) then with radicle inferior :- [p. 177]

JJCarpels 2- or more-ovuled, usually the ovules many, but it % 2 then the ovules superposed, or if ovules 2 collateral (ACANTHACE^ : *Thunbergia* only) the fruit a 2-valved capsule opening elastically from the tip:— [p. 180]

Ovary 1-locular, placentas parietal, or if 2-locular by insertion of placentas (some GESNERACE;E) only imperfectly so, ovules many :—

Parasitic leafless herbs; seeds very small, embryo very minute. XCIIL **Orobanchace***.

usually opposite. XCV. **Gesneracea.**

Ovary 2-locular or if Mooular then (some BIGNONIACT*) the seeds large and closely packed in the substance ol, or (PEDALINE*; : *Martynia*) the seeds small and protected within locelli formed by, the much accrescent parietal placentas:—

Fruit opening elastically from the apex by 2 " i.d a j valves; seeds usually supported on retinacul*; leave

VL XfIVIII. **Acanthacae.**

usually opposite. AUVIIX. r rarely

Fruit dehiscent but not opening elastically, ° indehiscent:— , ob^ mem-

Seeds large transverse, usually with a w . o and branous marginal wing, with horizontal embiy

no albumen, radicle centrifugal; fruit capsular or indehiscent and filled with fleshy or spongy P mostly trees with opposite compound leaves.

XCVI. **Bigoniaceae.** mostly

Seeds small or minute; herbs or shrubs with simple leaves:—

Ovary 1-locular with ovules attached singly or 1-arietal seriatly under the laminae of a projecting P 2-laminate placenta or 2-locular each locU 2-divided with ovules attached singly or 2-serially to inner angle of each subdivision; seeds not albuminous. XCVI. re XCVII. re Ovary 2-locular, the placentas attached to the mi-00 of the septum; seeds almost always albuminous.

XCII. **Scrophularineae.**

II Carpels 1-ovuled, or rarely 2-ovuled, and if so the ovules lateral not superposed and chambers of fruit always 1-seeded, indehiscent; leaves almost always opposite:—LP* 1797

Fruit not 4-lobed or if 4-lobed drupaceous; if 4-lobed into nutlets the ovary entire. XCIX. Yerd

Fruit separating into 4 distinct nutlets or (I^{es} often drupes; rarely 4-lobed not separating and then not drupaceous; ovary always 4-lobed. Labiar

IV. INCOMPLETE.

*Flowers hermaphrodite, less often (some CHENOPODIACEAE, LORANTHEACEAE, ELJEAGNACEAE, LAURINEAE) 1-sexual and then (CHENOPODIACEAE) the embryo peripheric annular or (LORANTHACEAE) the ovule not clearly distinguishable from carpellary tissue and seed without a testa or (ELJEAGNACEAE) perianth fleshy and partly adherent to ovary and the stamens with or twice as many as its lobes or (LAURINEAE) the perianth 2-seriate and anthers opening by valves; perianth almost always present, usually simple, if double (LORANTHACEAE sometimes) the outer whorl small, the seed with no testa and the stamens opposite the lobes of the inner perianth, if absent (female flowers of some 1-sexual CHENOPODIACEAE) the embryo peripheric annular:—[p. 183]

fOvary inferior; seeds with copious albumen :— [p. 181]

Ovary syncarpous completely or partially 6-, rarely 5- or 4-locular* 1-ovules very many superposed 2-seriatly in each locU or 1-serially

on the opposite sides of each placenta; seeds with a distinct testa; Perianth 3-lobed, often irregular; stamens 6; scandent herbs or shrubs CVI. **Aristolochiaceae.**

^{ov}ary Uocular V-, ovules V-3; seeds with no proper testa; stamens as many as and opposite the inner or only perianth-lobes:—

Ovules three, two or solitary, pendulous from the tip or below the tip of a free funicular central axis; perianth always simple calycine or corolline; terrestrial herbs, shrubs or trees frequently semiparasitic on roots. CXIV. **Santalace*.**

Ovule solitary, erect from the base of the ovary but at first not nearly distinguishable from the tissues of the inner carpellary ^{**H}; perianth corolline simple or sometimes double, the inner coloured large, the outer minute; epiphytic rarely terrestrial semiparasitic undershrubs or shrubs CXIII. **Loranthacea.**

^{ov}ary superior quite free from the perianth or (NYOTAQINM, ELSIO-^{«**}) with its base adherent to the persistent perianth-base; 1-ocular ^{an*} 1-ovuled or occasionally (most PHYTOLACCACE*) of several free. ^{So*} **XHYIBLaAaaa** of 2 syncarpous 1-ovuled carpels, rarely Mocular ^{Y^{lih}} (some AMAIUNTACE*) 2-many ovules on a free-central, or with (^{8o*} **PBOTEACE***) 2 collateral or more than 2 biserially superposed ^{ov}ules on a lateral placenta: - [p. 180]

Seeds without albumen or if albuminous (THYMEL^{ACE*} some times) the embryo straight; trees or shrubs, very rarely herbs: - [p. 1WJ

Perianth-tube constricted above the ovary, w ^ ^ J ^

Persistent, upper part deciduous, lobes 2 or 4 short, ^{TMTMA°} truncate; stamens as many as and alternate with ^{of twice} as many as the perianth-lobes, anthers normal; ovary i-

.....
Perianth-tube not constricted above the ovary, lobes rather long:—
Stamens as many as and opposite or twice rarely thrice as many

Stamens ^{:-} ^{always} ^{ovules} ^{proposed;} ^{DR} ^{proteaceae <}
* ^{ta one series,} anthers normal ^{j £ * £ %} ^{proposed;}
solitary or 2 collateral or several ^{2^{series}} ^{DR} ^{proteaceae <}
perianth calycine or corolline; trees or shrubs ^{DR} ^{proteaceae <}

Perianth-lobes imbricate ^ stamens often in 2, rarely in ³
series; ovules pendulous:—

Perianth-tube rather long, lobes 4^o, ^{twice as} as many as the lobes, sometimes ^ ^ ^ I ; ovary many, very rarely thrice as many, anthers ^x

1-2-celled, each cell 1-ovuled; shrubs or trees

CXI. **Thymelaace***

Perianth-tube very short, lobes either 6 or 4, B^{88,1^} stamens as many or twice as many as and opposite the anthers almost always opening by valves; ovary a 1-locular; shrubs or trees or, very rarely, parasitic twi

herbs. CXXIX. **Aurine***

{Seeds usually with copious albumen; if albumen scanty (NVCTAGI rarely) or none (CHENOPODLUMI sometimes) the embryo curved an centric or peripheric; usually herbs, rarely shrubs or trees :--!>

Leaves exstipulate or if stipules present (PHYTOLACCACE;E occast ally) then minute or reduced to tubercles:—

Perianth tubular, base adherent to ovary, tube short or persistent and often accrescent in fruit, limb deciduous, truncate or 3-5-toothed or -lobed, the plicately or simply valvate; carpels solitary, 1-ovuled, simple Ci. **Nyctagn^{6*}**

Perianth-lobes united only at the base, always imbricate:—

Perianth scarious and dry; flowers always bracteate 2-bracteolate; filaments always connate at the base, gynous or perigynous; ovary 1-locular, style simple or 2-3-ovule solitary or ovules 2-3; herbs or shrubs, leaves or alternate. CII. **Amarantace***

Perianth membranous, herbaceous or coriaceous, never scanous; stamens usually hypogynous; leaves alternate very rarely opposite:—

Flowers glomerulate, axillary or in spikes or panicles, cymose, rarely strobilate or sunk in the nodes if a rachis, or very rarely simply spicate, usually ebracteate. rarely bracteate, very rarely both bracteate and 2-braoteolate; herbs with membranous or herbaceous perianth, occasionally in 1-sexual female flowers perianth absent; ovary 1-locular, 1-ovuled; style simple or 2-3-lobed,

!\$*>><<. CIII. **Chenopodiacef**

powers racemose, racemes terminal or axillary, usually bracteate and 2-bracteolate; trees or shrubs, rarely herbs woody at the base; perianth herbaceous or coriaceous; ovary 1-locular 1-ovuled, style simple, or carpels sever*¹ apocarpous each with 1 ovule and a single style

CIV. **Phytolaccacetf***

Stipules connate as an area embracing the nodes, pereistent rarely deciduous, leaving a circular scar opposite

attachment of alternate or horizontal lines between the attachment of occasionally opposite leaves; perianth membranous or herbaceous, often coloured; stamens perigynous; ovary 1-locular, 1-ovuled; style arms or styles 2-3; herbs rarely undershrubs, shrubs or trees. CV. Polygonacea.

Flowers 18 1n8sexual, rarely (rarely PIPERACE;E) hermaphrodite and then with no perianth 5 perianth often absent or minute, if present simple or rarely (some EUPHORBIACE^A) double and then the outer whorl conspicuous ^ ^ ^ stamens either all central or those of the outer series alternate with the inner Perianth-segments, or if the stamens of the outer series opposite the inner perianth-segments then the seed provided with a testa and the plant not parasitic, ovary superior very rarely (some EUPHORBIACE/E) inferior and then the stamens opposite to and not by numerous than the perianth-segments; anthers never opening

tie trees, shrubs or herbs:—[p. 184]
*T_{re} strual trees, shrubs or herbs:—[p. 184]

Sheaves simple or (some EUPHORBIACE;E) digitately compound, never pinnately compound :—[p. 184]

Ovary monocarpellary 1-locular, or if syncarpous 2- or more-locular; ovules in each carpel or loculus solitary or 2 collateral; rarely (some PIPERACEJE) ovary imperfectly or almost perfectly 3-4-locular, with 6-8 ovules in each loculus 2-seriately superposed on intruded placentas and then with 2-sexual flowers:— [p. 184]

Leaves exstipulate; perianth gamophyllous calycine 3-, rarely 2-4-lobed; flowers 1-sexual, fascicled or subumbellate; stamens monadelphous, ovary 1-locular 1-ovuled in the base of the respective perianths; ovule erect; albumen copious fleshy, embryo very minute; trees with alternate leaves

CVIII. Myristicese.

Leaves stipulate or if stipules absent (PIPERACEJE : *Peperomia*) the flowers 2-sexual and perianth 0:—

**Ovary 1-locular, 1-ovuled or if syncarpous (some PIPERACEAs), the carpels only partly united, or if completely united the loculi incomplete and in either case the ovules in each loculus more than 2; flowers usually minute, perianth either simple or absent:—^p. 184]

Seeds with copious floury albumen and a very minute embryo; flowers in spikes or very rarely in racemes, rarely 1-sexual; perianth almost always absent; herbs or shrubs, very rarely trees; leaves usually alternate [p,184] CVII. Piperace*.

^e nodes, the scales of adjacent nodes alternate; flowers in spirals; perianth-segments 1-2, small; stamens 2-ovuled, seed solitary, albumen none [p. 183] CXVIII-189

Y. GYMNOSPERMEAE.

Perianth present in both sexes, of male membrane-Perianth absent from the flowers of both sexes. Leaves very perianth absent from the flowers of both sexes. CXXIV. Cycadaceae.

VI. MONOCOTYLEDONS.

Perianth 2-seriate the segments of both series corolline, rarely (TACCAGEAE) subherbaceous and then with ovary interior, or inferior only the inner series corolline;

^gynocarpos, rarely (some X, MDM), the perianth inferior or 1-seriate calycine and then in aquatics herbs

ovary:—[p. 187] inferior. "any small, often very minute, without albumen, ovary inferior

3-locular with 3 placental placentae, rarely 3-locular; outer perianth-segments calycine, inner woody membrane

stamens 3 or 6 or 9, rarely by further multiplication more than 9 or 10; flowers often 1-fertile; aquatics; rocharides.

Outer perianth-segments corolline like the inner: enlargement of a segment of the outer series; stamens 3 or 6 or 9

frequently leafless gynostemium; marsh or land plants, CXXVI. D U I E. anniaceae.

lower irregular, usually markedly so from a segment of the inner series as a labellum

gynostemium confluent as a column bearing sessile or nearly sessile anthers. CXXVII. Orchidaceae.

Seeds conspicuous, with copious albumen:— inferior or if free or half-superior (some Heterostreptophytes)

terrestrial plants with ovary 3-locular while both series of segments are corolline and 3-merous and the embryo is typically enclosed within the albumen:—[p. 186]-!

Flowers very irregular, outer series of perianth-segments calycine; perfect stamens either solitary with 5 reduced to staminodes, with a single staminode; seeds often with an arillus

CXXVIN. Scitamineae.

Flowers regular or only slightly irregular:—

Outer series of perianth segments calycine; stamens 6

CXXIX. Bromeliaceae.

Both series of perianth-segments corolline or rarely

TACCACEAE) both series subherbaceous:—

Stamens 3, opposite the outer perianth-segments; regular or obliquely irregular; locules of the usually 3-ovary many-ovuled. CXXXI-

Stamens 6, very rarely (some AMARYLLIDACEAE) more or if 3 then (AMARYLLIDACEAE and H/EMODORACEAE) opposite the inner perianth-segments or if (Dioscoreae) times) only the stamens opposite the outer perianth-seg-

perfect the locules of the ovary only 2-ovuled:—

Ovary 1-locular, placentas parietal, many-ovuled; 6, hooded. CXXXIII. Taccaceae

Ovary 3-locular, or if 1-locular (AMARYLLIDACEAE) the stamens not hooded:—

Flowers 1-sexual, very small; stems scandent; 6, or if 3 these opposite the outer perianth-segments.

CXXXIV. Dioscoreae

Flowers hermaphrodite, conspicuous or very large; not scandent; stamens 6 rarely more or if 3 the site the inner perianth-segments:—

Ovary inferior, loculi many-, rarely 1-2-ovuled; embryo very small, embedded in the albumen

CXXXII. Amaryllidaceae

Ovary free in the fundus of the perianth, or superior, less often inferior; loculi 1-many-ovule embryo not completely covered by the albumen

CXXXIX. HabiBinodoraceae

Ovary superior with embryo completely enclosed within the locules; or if ovary half-inferior (some BOXBUEGGIACEAE) the perianth 2-merous; the ovary 1-locular; if embryo not completely enclosed with the albumen, then (PONTEDEBIACEAE) the plants or (COMMEMORAE) on the inner perianth flowers regular or only slightly irregular:— [p. 185]

{Onto as well as inner series of perianth-segments, if corolline:— [p. 187]

Perianth-segments of both series present and isomerous :—

Perianth-segments 2-merous; stamens 4; ovary ^{UoTMTM}

CXXXV. Roxburghiaceae.

Perianth-segments 3-merous; stamens 6 or 3:—

Terrestrial plants of very various habit; embryo small, shorter than and completely enclosed within the albumen; **inarescence very various, axillary or ^{oe ver} _{ceae.}**

on a 1-leafed scape. CXXXV l. ^{w TM} _{n r}
Aquatic erect or floating herbs; embryo cylindrical, as in **OJ**, as and lying within a central canal in the albumen; **mngr-**escence racemose or spicate, terminating a 1-leafed so p

CXXXVII. Pontederaceae B.

Perianth of the outer series either a large solitary segment embracing the inner 3-merous series or else absent; flowers

: Sr a fl i te imbri : : St S ^{nal} _{ca.}

{Outer series of perianth-segments calycine, inner series corolline; embryo marginal or only partially enclosed within the albumen

[P-186] CXXXIX. Commelinaceae.

^P («anth if 2-seriate with "the "segments of both series calycine < j > f J* ° t the inner series corolline then not larger than those of the • « * ^ ies or perianth 1-seriate calycine-and then either in terrestrial * « " • or in aquatic herbs with apocarpous or solitary < « P ^ - « ^ e d to scales or bristles or wanting; 11 perianth-segments of inner ? * « corolline and larger than the outer (AHSMACE*) then aquahc **no** ^{w i} * apocarpous gynoecium; ovary always superior : - O it > J

^ ^ n t h regularly 2-seriate, segments of each series 3-merous., « W ^ acarpous with albuminous seeds, or if ovary apocarpous and seeds ^w «hout dbnaM, (A I M U M) then erect scapigerous herbs with **con-**

^P W Uous whorled paniculate or umbellate flowers :- [P- 1 <> J

TM «ianth with segments of both series calycine ^{ng} ^ or heibaceous; ^r «ely (some JUNACE ^) the segments of inner series * « « * « <> en not larger than those of the outer; ovary syncarpous; albumen ^{co} pio \ i B " _ [p. 188]

^ uit ' a 3- ^ lved capsule; gra Bsy herbs with slender linear ^{used} terete leaves, or with leaves reduced to " ^ L ^ ^ ^ J u n ^ . within the albumen. C ^ , . emb r w O Fruit indehiscent; shrubs or trees with flattened leaves, em not enclosed within the albumen:—

* leaves long simple with numerous parallel-veins ^{erec t or} climbing shrubs; embryo lenticular applied ^{he a} outside **Magella** ^ near the hilum [p. 188]. ^{c x l J >}

*Leaves broadly flabellate-plicate or pinnatisect; trees or climbing shrubs; embryo situated in a small pit periphery of the albumen; flowers in spadices [p. 187]. CXLII. *Palmeae*.

%Perianth with an herbaceous outer and a rather larger or petaloid inner series of segments; ovary apocarpous; embryo horseshoe-shaped; aquatic erect herbs with flowers disposed in whorled panicles of umbels or simple umbels [p. 187]. CXLVII. *Alismaceae*.

§Perianth absent or reduced to scales or bristles; or if herbaceous or hyaline (NAIADACEAE often) the segments regularly 3-merously 2-seriate or if, rarely, 6 in 2 rows then erect weeds with small flowers disposed in simple racemes or and with a fleshy embryo that is not horseshoe-shaped:— [p. 189] ++Inflorescence of many-flowered or few-flowered racemes, or if flowers solitary then not placed in the axils of glumaceous bracts:— [p. 189]

Aquatic or marsh plants; flowers small not in spadices spadices these not covered by spathes or spathaceous bracts

Freely floating minute stemless lenticular or granular rootless or with 1 or more rootlets that do not enter the perianth 0; flowers minute from the margin or upper side frond; albumen present or 0. CXLVI. *Lemnaceae*.

Fixed herbs with erect scapigerous or elongated submerged leafy stems rising from a fixed usually creeping stock; perianth present or absent:—

Perianth herbaceous or hyaline, very rarely of 6 segments and if so in small scapigerous herbs with or spicate flowers, oftener of 4 or 3 or 2 segments but frequently absent; inflorescence various but rarely spadix and if so in herbs with leafy submerged or floating stem albumen 0, embryo large fleshy not horseshoe-shaped

CXLVIII. *Naiadaceae*.

Perianth of filiform bristles or membranous scales; scapigerous herbs with creeping rootstocks emitting stems; leaves elongated linear parallel-veined flowers in cylindric or globose 1-sexual superposed naked or 1-bracteate at the base. CXLIV. *Typhaceae*.

Terrestrial or epiphytic plants or if (some ABOD**) aquatic fixed or rarely free floating herbs, the flowers subtended by a usually much modified spathe :-

Trees or erect or scandent shrubs with flowers

perianth 0; leaves ensiform parallel-veined spinulose along the edges and the central costa beneath; spadices with spatheaceous, little modified bracts, fascicled or panicled, seeds albuminous. CXLIII. **Pandaneae**.

Herbs, epiphytic scandent less often erect, or more usually erect terrestrial, occasionally aquatic fixed or rarely tri-stid free floating, with flowers monoecious in the same spatix or less often hermaphrodite, very rarely dioecious; perianth 0, of imbricating scales; leaves various, rarely parallel-veined then not spinulose, rarely spinulose and then venation reticulate; spadix simple with a usually much modified and generally enveloping subtending spathe; albumen present or 0

CXLV. Aroideae.

tlnaoescence of heads or spikelets composed of solitary flowers in the axils of glumaceous bracts; perianth-segments small, scale-iiKe or 0; seeds albuminous:—[p. 188]

Flowers always 1-sexual in depressed or subglobose usually androgynous heads; ovary 3-2-locular, loculi 1-ovuled, ovules pendulous; perianth-segments 6 or fewer, scanous or hyaline, aquatic or marsh scapigerous herbs. . . . CXLIX. **Eriocaulaeae**. lowers hermaphrodite or 1-sexual in spikelets with imbricating glumes; ovary 1-locular, ovules solitary erect or ascending; Perianth-segments greatly modified or absent; grassy herbs:—

Stems solid; leaves 3-ranked, rarely 0; sheaths rarely ligulate, closed in front; perianth 0 or of hypogynous bristles or scales, fruit a compressed or 3-gonous nut with the seed within iree^, embryo inside the albumen; sedges CL- Cy P Cr ^ f J

Stems usually hollow except at the nodes; leaves ^ «.» f j very rarely subspiral; sheaths almost always ligulate behind and split in front; perianth represented by a 2-nerved palea and 2 lodicules, or 0; fruit a caryopsis with the seed-coats adherent to the pericarp, very rarely free within; embryo at the base of the albumen; grasses. CLL ft*"*"-

PTERIDOPHYTA.

Leaves large in proportion to the stem, the fertile ones not confined to a particular region :—

Leaves bearing sporangia on their lower surfaces (VII. *ILICES*) :—

Sporangia with a ring :—

King equatorial, encircling the sporangium :—

Being transverse, caudex and fronds rigid

CLII.

Gleicheniaceae.

Ring vertical or if transverse (*Trichomanes*) the caudex flexible and fronds thinly membranous. CLIII. *OlyV. Schizaceae.*

Ring opercular, crowning the sporangium CLIV.

Sporangia without a ring, opening down one side:

Vernation circinate : sporangia marginal or dorsal

CLV.

Marattiaceae.

Vernation erect; sporangia spicate CLVI.

Leaves bearing sporangia on their upper surfaces (VIII. *RHIZOMORPHACEAE*) :—

Fugacious floating annual aquatic herbs CLVII. *St. cks.*

Perennial marsh-herbs with wide-creeping slender roots or CLVIII.

Leaves small in proportion to the stem, the fertile ones very limited to a particular region:—

Leaves in whorls, the fertile ones peltate forming a spike of the stem bearing sporangia on their inner faces (IX. *EQUSETINEAE*) :—

CLIX. *B.*

Leaves not whorled, the fertile ones flat with sporangia (X. *LYCOPODINET.*) :—

Sporangia uniform CLX. *Lycopodiaceae.*

Sporangia of two kinds. CLXI. *Selaginaceae.*

IV. BENGAL PLANTS.

A.—PHANEBOGAMIA.

I.—THALAMIFLOR.E.

Sepals ^{8 he! "baiCe(:)us} » rarely petaloid, distinct, imbricate or valvate, or connate in a tube with imbricate or valvate or open lobes, free or ^{ra} ^{ly} ^{With the base of the tube} adnate to the base of the ovary. **Torus*** small, or raised or stalk-like, or thickened and fleshy ^{Wn} ^k ^k ^a ^{disk} annular or cupular or flattened, entire or ^{to} ^o ^{broken into} glands, free or adnate to calyx and ovary, or the ^{IQ*} ^{alone} » rarely to calyx alone. *Petals* 1-2-seriate, unlike ^{pi} ^s ^{or} ² ^{many} ^{seriate} as many as sepals or fewer by ^{abortion} passing gradually from the sepals, or ^{adnate to the} ^{base of the calyx} external to the disk, or sometimes ^{when disk} ^{absent} adnate at the base to the stamens. *Stamens* ^{numerous} ^{or few} ^{inserted on} the torus or rarely on the base of the calyx, ^{free or} ^{adnate to base of petals}, or few and inserted ^{around} ^{upon or within the disk}. *Carpels* free or connate, or ^{1*} ^{arely} ^{in five} ^{or less} embedded in the fleshy torus, or immersed ^{TM^e} thickened disk.

Order I. RANUNCULACEJE.

Herbs, rarely shrubs, annual or perennial; *leaves* radical or ^{alter} ^{na} ^G ^{rarely} opposite; simple, rarely compound; stipules 0, ^{or} ^j ^{adnate to} **Petiole**: *Flowers* regular or irregular, hermaphrodite ^{Sexual} ^{*****} ^{very rare} (*PeBonia* only). *Sepals* 5 or more, ^{arely} ^{of} ^{ecious} ^{often} petaloid, imbricate, rarely valvate in ^{burst} ^{of} ^{petals} 0 > or 5 or more, rarely 3, often minute or deformed. *Stamens* ^{many} ^{hypogynous}; anthers adnate; dehiscence longitudinal. *Carpel* many, rarely 1, usually free, 1-celled; stigma ^{simple} ^J ^{ovules} 1 or more on the ventral suture, anatropous, erect

with a ventral or pendulous with a dorsal raphe. *Fry/it* 01 ^{ed} _{ed}
 achenes or many-seeded follicles. *Seed* small; albumen ^{horny} _{horny}
 rarely fleshy; embryo minute.

- Leaves opposite; sepals valvate; climbing shrubs:— ^{mat} _{8,}
 Petals 0; petiole not produced as a tendril ^{Cle} _{ji\$}
 Petals many; petiole produced as a tendril ^{Narave} _{ji\$}
 Leaves alternate; sepals imbricate; herbs :—
 Carpels free, 1-ovuled:—
 Leaves compound; petals 0; ovule pendulous ^{Thalicttrum} _{cnlus<}
 Leaves simple; petals 5; ovule erect ^{Ran} _{Xn}
 Carpels united at base; ovules several; leaves much dissected ^d _{jjft,}
^{Nige}

1. Clematis Linn.

Woody, usually climbing undershrubs; *leaves* ^{op\$osw} _{op\$osw}
 compound, petiole sometimes twining but not produced ^d _{a^a}
 tendril; stipules 0. *Flmvers* axillary or terminal, solitary* ^{f^as^} _{Q,}
 or paniculate. *Sepals* usually 4, valvate, petaloid. ^{ota} _{je J}
Stamens numerous. *Carpels* many, each with 1 pendulous ^{ovu} _^
 styles usually long, bearded. *Frvit* a head of sessile or ^{stal} _^
 achenes, each with the style persistent as a long twisted ^{pil} _^
 tail or a long, straight, naked beak.

Flowers solitary axillary; achenes with long, straight ^{eft} _{ks} ^{pot} _>
 feathery ¹ _{Cadm}

- Flowers in axillary panicles; achenes with long feathery tails:—"
 Sepals spreading from the base:— ^{l^a.}
 Filaments glabrous; flower not exceeding a half-in. across. ^{iv} _{fl#}
 Filaments hairy; flower more than 1/5 in. across. ^{htia} _n
 Sepals erect with recurved tips; filaments hairy; flower ^{13flOre} _{jj^, <<}
 1/5 in. across. [?] _t

1. CLEMATIS CADMIA Ham.; F. B. I. i. 2. ^{Thalicttrum}
bracteatum F. I. ii. 671.

Tropical jungles of N. and E. Bengal.
 A climber. *Vernac.* Ban jelaki, Ban maris. . 4;

2. CLEMATIS GOURIANA Eoxb.; F. I. ii. 670; F. B. * ^{l,}
 E. D. 0.1356.

N. Bengal, ruins of Gour; Chota Nagpur, on ^{Parasnath}
 and other mountains,
 A climber.

Ranunculus.]

RANUNCULACEÆ.

3. CLEMATIS WIGHTIANA Wall.; F. B. L. 5*

Orissa, on mountains.

A climber.

4. CLEMATIS NUTANS Boyle; F. B. L. 5*, mountains.

Chota Nagpur, on Parasnath and other

A climber. Santal. Bonga khanti.

2. Haravclia DC.

2-foliolate,

Woody climbing undershrubs; leaves* paniculate.
 Petiole ending in a tendril; stipules 0.

Palms 4-5, valvate, petaloid. Petals* pendulous ovule;
 Stamens numerous. Carpels many, each with
 one long, bearded. Fruit a head of stamens
 the style persistent as a long twisted pilose
 achenes each with 8.

5. NARAVELIA ZEYLANICA DC.; F. B. L. 5*

Atragene zeylanica F. I. 5*

Hedges and thickets, general.

A climber. B. Chagul-bati, murcha (Sundribans).

3. Thalictrum Linn.

Perennial rigid herbs; leaves alternate,
 veining, often auricled or stipulate. Compound,
 lobes, often polygamous. Sepals 4-5, imbricate, petaloid.
 Stamens numerous. Carapels many, each with
 one long, bearded.

Pendulous ovule; styles distinct, sometimes

in a head of sessile or stalked achenes.

6. THALICTRUM JAVANICUM Bl.; F. B. L. 5*

Chota Nagpur, on Parasnath.

A slender, stiff herb.

4. Ranunculus Linn.

or

Annual or perennial herbs; leaves alternate,
 dissected; stipules membranous or 0. Panicled,
 usually

Stipules 0, often glandular at base.

Carpels many, each with 1 ascending ovule, styles

in a head or spikelet of beaked achenes.

7. RANUNCULUS SCBLERATUS Linn.; F. B. L. 19; B. D. 5*

28. III. inltciM F. I. ii- 6⁷¹

Banks of rivers and nullahs, fairly general.
An acrid weed. Vernac. Polica (Tirhut).

5. *Nigella* Linn.

Annual erect herbs; leaves alternate, 2-pinnately blue or yellowish, sometimes with an involucre of floral leaves. Sepals 5, regular, deciduous, imbricate, petaloid. Petals 5, with claw and small 2-fid limb. Stamens numerous. Carpels 3-1 sessile, connate below, each with several horizontal ovules on the ventral suture; styles usually long. Fruit a capsule dehiscing along ventral suture of free portion of individual carpels.

8. *NIGELLA SATIVA* Linn.; E. D. N. 158. *N. infocara* in the western parts. A crop, also occurring as a weed. Bong. Mugrela, kaljira.

Order II. DILLENACEAS.

Trees or shrubs, sometimes climbing, or herbs; leaves alternate, simple, entire or toothed; stipules 0, but petiole rarely with lateral deciduous stipules. Flowers regular, hermaphrodite, often showy, white or yellow. Disk 0. Sepals 5, Lfc 6, more or fewer, imbricate, persistent, often accrescent. Stamens many, hypogynous, anthers innate; dehiscence longitudinal, introrse or laterally by terminal pores. Carpels 1-many, free or cohering; stigma simple; ovules solitary amphitropous, or few ascending, or numerous on the ventral suture. Fruit indehiscent berry or dehiscent follicular. Seeds 1 or few, arillate, rarely numerous and (*Dillenia*) exarillate; testa crustaceous, rapeseed albumen fleshy; embryo minute.

Climbing shrub; carpel 1; filaments expanded, anther-eel remote, oblique. Trees; carpels 5-20; filaments slender, anther-cells parallel ...D.

6. *Delima* Linn.

Woody climber; leaves scabrid, parallel-nerved from the midrib. Flowers numerous, hermaphrodite, white, in terminal panicles.

Sep* 5. Petal* 2-5. Stamens numerous; filaments dilated upw «fc, anther-cells widely diverging. Carpel solitary, subglobose. narrowed into a subulate style; ovules 2-3, ascending. Frui* an ovoid, coriaceous, 1-seeded follicle. Seed with a cnp-W* to ofted arillus.

9- DEUMA SARMENTOSA Linn.; 1. B. I. i. 81 i E. D. D> 243

Tetraceru mrmentosa F. I. ii. 645.

Tippera; Chittagong.

A climber.

7. Dillenia Linn.

Trees; «eaBe8 largej simple, parallel-nerved from the midrib; Vleso. Floweri^Ls with or before the leaves large or very large, solitary or fascicled, yellow or white. Sepals 5; at first fading, afterwards connivent, accrescent. Petals 5, caducous* 7''wnumerous; anthers linear, dehiscence by small chinks or **«l inner introrse, outer extrorse. Carpels 5-20, coherent m m centre; ovules many. Fruits globose, composed oJ an *c «escent calyx enclosing the matured indehiscent carpels. See* not •dilate, pulpy or not.

*<10>><3 with the leaves, large (6 in. across), solitary, petals white;

^Pels about 20; fruit as large as the human fist....., nitca -

>>wers before the leaves, petals yellow :—

Pl^ers sma ii, ((15<5icle1 ; carpi_s 5,7 .fcuit not larger than a plum.

^icela with scattered braoteoles near the middle; ttoweis 2 m.

ac^oss; carpels 5-7. ncabiella.

Pedicels without bracte'oles; flowers 1 in. across; carpels »--l'»'«''' ;

Rower large, solitary, 4-5 in. across; carpels 8-12; fruit as la, ge as

a Sl>>all apple.....

10- Diu,ENIA INMCA Linn.; F. J. I. i. 36; E. U D. 428. D.

>>pecio«a P. I. ii. 650.

Planted, but also readily self-sown in all the P^{rovinces}.

A tree. Beng. Chalta, chalitá, hargéza; Santal. Korkot;

Vriya Oao, rai.

U - DILLENA scABEEüA Boxb.; F. I. ii. 653; F. B. 1.1- 38.

Chittagong.

A tree. £em/. Hargéza (Chittagong).

12- BILLBNA PEXTAGYNA Boxb.; F. L it 652; F. B. I- i-

E. D. D. 438. Z> augusta F. I. ii. 652.

[*Dillenia*.

Behar and Chota Nagpur, common ; \V. Bengal* rare.
 A stunted tree. *Bihar*. Agor; *Beng*. Karkotta; *Santal*.
 Korkot; *Uriya* Eai.

13. DILLENIA AURBA Sin.; F. B. I. i. 37; E. D. D. 428.
 N. Bengal, submontane forests.
 A spreading tree. *Vernac*. Chammagai.

Order III. MAGNOLIACEA.

Trees or shrubs, sometimes climbing, usually aromatic, [^] Q.
 alternate, simple, entire, rarely toothed ; stipules convolute
Flowers hermaphrodite, rarely 1-sexual, axillary or terminal often
 showy, yellow, white, or pink. *Disk* 0. *Perianth* of similar sepals
 and petals, hypogynous, imbricate, in 3 or more whorls, BF
 caducous, rarely 0. *Stamens* many, hypogynous; [^] nla
 round or flat, free or connate; anthers basifixed; <*ehisc
 longitudinal, variously introrse, lateral or extrorse. *Carpels* [^] n
 free or partly united, in 1 or more whorls on a short or long ¹⁰¹
 style usually short, stigmatic on inner face ; ovules 2-^{*} an
 anatropous or amphitropous on the ventral suture. *Fruit* a head
 or cone of baccate, rarely woody, indehiscent, or of ^{dehisc} cent
 follicular carpels. *Seeds* 1 or few, funicle sometimes ^{de} r
 testa crustaceous and closely united to tegmen, or fleshy [^] with
 tegmen distinct; albumen granular or fleshy or oily; ^{BLBbl} yo
 minute.

Carpels in a loose spike on a stalked gynophore *Michelia*.
 Carpels densely packed on a sessile gynophore *Magnolia*.

8. *Michelia* Linn.

Trees; *leaves* evergreen or deciduous; buds enclosed in the connate convolute caducous stipules. *Flowers* solitary, usually axillary. *Perianth* of 9-20, at least 3-seriate, similar sepals *** petals. *Stamens* numerous, many-seriate; filaments flat, anther³ adnate and introrse. *Carpels* many in a loose spike on a stalk[^] gynophore; ovules 2 or more. *Fruit* a lax or dense elongate spike of coriaceous **follicles** opening by the dorsal Suture. *Seeds* with a long **funicle**, pendulous ; testa fleshy; albumen oily.

^{1 1} ^CHELIA CHAMPACA Linn.; F. I. ii. 656; F. B. I. i. 42; E - D. M. 517.

Wanted near villages and temples.

^A tree; flowers yellow, very fragrant. Hind, and Beng.

Champá, champaka; Uriya Kanchana u, champá.

9. Magnolia Linn.

^{rp}
in th^{6eS} or Shrubs; ^{leaves} evergreen or deciduous; buds enclosed
min² ^{conn}ate convolute caducous stipules. ^{Floivers} large ter-
many^{8<} ^{& ah} 3. ^{Petals} 6-12, 2-4-seriate. Stozens numerous,
many^{S6} ^{riate,} filaments flat, anthers adnate and introrse. ^{Carpels}
e W i / ? ^{bri}ate on a ^{se}ssile gynophore; ovules 2. JFW an
by ^{e T} spike of persistent, adnate, 1-2-seeded follicles opening
fleshy ^{do}al Suture" ^{^ e ^} with a long funicle, pendulous; testa
^{men}0ily <

15. ^MAGKOLIA PTEROGARPA Roxb. ^{M. splienocarpa} F. B. I. 41; E. D. M> 51. ^{Liriodendron grandijiorum} F. I. >>. 653.

Chittagong.

^A tree; flowers large, white, fragrant. Beng. Dulichamp.

Order IV. ANONACEJE.

^{Trees or} shrubs, often climbing, sometimes aromatic; ^{leaves}
^{alternate,} simple, entire; stipules 0. ^{Flowers} hermaphrodite,
^{rarely 1.} usually valvate, free or
^{Con*iate," TeT)} ^{Disks or} ^{Seplms} 3, usually valvate, free or
^{lleanly} rare! ^{hypov} ^{nous} » in 2 or 1 3-merous whorls. ^{Stamens}
^{short or 0;} ^{ft} ^{W,} ^{nv} ^{Po}gynous, close-set on the torus; filaments
^{truncate} head ^{an-u} ^{adna} ^{fce} » connective produced in an oblong or
^{Carpels} 1-^{man} ^{dehiscence} longitudinal, extrorse or sublateral.
^{distinct;} styl^{AV} ^{free or rare} 7 (^{An}ona) united, but with stigmas
^U ^{Cate} or 2-ⁱ ^u ^S ^{ort} Or ^{or} ^{sti} ^{ma} capitate or oblong, entire or
^{Ure,} ^{au} ^{ro} ⁷ ^{ovule}s 1 or more, basal or on the ventral
^{se} ^{stipile,} ⁷ ^{ith} ventral rap^{he}. ^{Fruit} of 1 or ^{more}
^{rarely} ^{Wnona} the ^{many,} ^{seeded,} usually indehiscent carpels;
^{many-seeded} ^{the} ^{onvrx.} ^{1^} confluent in a subglobose ^{manv.} ^{celled,}
^{albumen} ^{dense} ^r ^{umina} ^{te;} embryo small, sometimes minu*

Carpels not confluent in front:—

Petals imbricate :—

Sepals imbricate

Sepals valvate

Sagerma.
Uyaria.

Petals valvate:—

Anther-cells not concealed by overlapping connective :—

Petals of inner series larger than those of outer :—

Ovules 0 or more

Ovules 1-2

Sacco^etalum.
Mili^{u9a}
AlphoB**

Petals subequal, ovules 4-8

Anther-cells concealed by overlapping connective :—

Peduncles hooked; petals connivent at concave base... A

Peduncles not hooked :—

Petals of both series flat, lanceolate, subequal, spread the base:-

Ovules many, 2-seriate

Ovules definite:—

Ovules 2-6, 1-seriate on the ventral suture

Ovules 1-2, basal or subbasal

rtahow⁹
ng from

Cananga.

Unona.
Polyalthia.

Petals of the two series unequal:—

Petals of outer series spreading, those of inner concave, nivent, overarching stamens and pistil

Petals of outer series thick, rigid, connivent, those of inner

ave coO-
trepho ^
er ^ao
***10° - puln.**
MelodQ ^.

Carpels confluent; petals valvate, those of outer series thick, rigid, nivent, larger than those of inner; anthers concealed by overlapping

connective

1 - ping
..A01**

10. Sagera Dalz.

Trees ; leaves shining, glabrous. Flowers small, axillary, or fascicled on woody tubercles, hermaphrodite or 1-sexual. Sepals 3, orbicular or ovate, imbricate. Petals 6, imbricate in 2 series, equal, usually orbicular, very concave. Stamens 6-21, imbricate in 2 or more series, broadly oblong, thick, fleshy ; anther-cells dorsal, oblong, connective produced. Carpels 3-6; style short, stigma obtuse or capitate; ovules 6-8 on the ventral suture. Fruit of discrete, globose or ovoid ripe carpels.

16. SAGEREA LISTERI King.

Chittagong.

A tree; stamens 9 5 ripe carpels an inch long; seeds with a i.about 12 in 2 rows. Beng. Dhainan (Chittagong)-

11. Uvaria Linn.

Scandent shrubs; *leaves* dull, pubescence stellate. *Flowers* frmtolor leaf-opposed, rarely axillary, solitary or in cymes or lases, yellow, purple or brown. *Sepals* 3, valvate, often connate ^{b e} W *Petals* 6, imbricate, in 2 series, orbicular, ovate or oblong, ^{so}metiine, connate at the base. *Stamens* numerous; connective ^{ov}ate.oblong, truncate, or subfoliaceous. *Thalam* depressed, ^uientose. *Carpels* many, linear-oblong; style short, thick, ^{ov}ules numerous, 2-seriate, rarely few, 1-seriate. *Fruit* a head of numerous dry or berry-like free ripe carpels, each few- to many-seeded.

Leaves ^more or less pubescent:—

Leaves over 6 in. long, sparsely pubescent beneath; flowers at least ¹/₅ in. across; carpels at least an inch long, many-seeded:—

Peduncles 1-2-fld.; flowers 2 in. across, brick-red, pedicels (1 m.) longer than buds; carpels globose or oblong, shorter than the 1-in. [^]ng stipe *Hamilton*[^]

Peduncles many-fld.; flowers 2 in. across, dull purple-red, pedicels (3 in.) shorter than buds; carpels oblong, exceeding the 4 m. long stipe. *macrophyllt.*

[^]aves underpin Von[^]g[^]densely velvety" beneath; peduncles 1-2-fld.; ^{fl}owers under 1-5 in. across; carpels less than 5 in. long, narrow ovoid, with very short stipe; 1-2-seeded. *ferrug* ^{*17}

[^]aves quite ^glabrous on both sides, 4-9 in. long; flowers 1 [«] *acro* [»]; ^{Car}Pels 1 in. long, ovoid or oblong, stalk over 1 in. long *Hookeri.*

17- UVARIA HAMILTONI Hook. f. & Thorns.; F. B. I. i. 48.

Behar, Monghyr; N. Bengal; E. Bengal, Madhupar jungles.

A climber. " T . AQ .

[^] UVARIA MACROPHYLLA Roxb.; F. I. ii. 663; F. B. I. i. « , E. D. u. 69.

Chittagong.

A climber. *Beng.* Bagh-runga. v fl I.

19. UVARIA FERRUGINEA Ham. *Ellipeia ferruginea* t. * . ii. 52.

Tippera.

A climber.

[Uraria.

20. UVARIA HOOKERI King. *U. Naru?n* var. *macro?*

hylla

F. B. I. i. 50.

Orissa, Khurda.

A climber. *Uriya* Gaichiria.

12. Saccopetalum Benn.

Trees; leaves deciduous, pubescent. Flowers solitary or fascicled, axillary. Sepals 3, valvate, small. Petals 6, 2-seriate, erect, valvate; outer small, sepal-like, inner much larger, connivent, saccate at base. Stamens numerous; anthers contiguous, dorsal, connective much produced. Carpels many, ovules 6 or more. Fruit of subglobose long-stalked rip carpels.

Peduncles very short (*25 in. long), solitary in old axils; inner petals oblong-lanceolate; carpels glabrous..... longiflorum.
 Peduncles very long (2-3 in. long), cymose, leaf-opposed; inner petals oblong-obtuse; carpels puberulous..... tomentosum.

21. SACCOPETALUM LONGIFLORUM Hook, f. & Thonis.;

V. B. ^

* 88 >

j A to the

N. Bengal, Purnea; Chittagong, thence introduced to Calcutta Garden in 1810, but not found wild since.

A tree.

22. SACCOPETALUM TOMENTOSUM Hook. f. & Thorns.;

B. J.

i. 88 ; E. D. S. 487. *Uvaria tomentosa* F. I. ii-667,

Behar ; Chota Nagpur; Orissa.

A tree. *Hind.* Kari; *KoL* Lapkari; *Santal*

me'

Uriya Patmossu.

13. Miliusa Leschen.

Trees or shrubs. Flowers hermaphrodite or 1-sexual, green or red, solitary, fascicled or cymose, axillary or extra-axillary. Sepals 3, valvate, small. Petals 6, 2-seriate, valvate; outer smaller, sepal-like, inner connate when young, at length contiguous, ovoid; dehiscence extrorse; connective slightly apiculate. Carpels many, linear-oblong; style short, oblong; ovules usually 1-2, rarely 3-4. Fruit of globose or oblong 1- or more-seeded ripe carpels.

Small tree; leaves glabrous above, glabrous or tomentose beneath; flowers 1*3 together, axillary, dioecious; inner petals glabrous on both sides, Carpels e labrous, -5 in. long, "shorter than the glabrous stipe.....*Roxburghiana*.
 J- all t
 dite • ^,leaV6Stomentose on both surfaces; flowers racemose, hermaphro-
 Pube, Inner Petals densely tomentose outside, glabrous inside; carpels
 so ent, -75 in§ long> rather longer than the pubescent stipe...*velutina*.

28t ^IL IUSA ROXBURGHIANA Hook. f. & Thorns.; F. B. I. i. 87.
Uvaria dioica F. I. ii. 659.
 Tippera; Chittagong.

24 \f^A SmaU tree* Vernac. Tasbi.
 • MIUUSA VELUTINA Hook. f. & Thorns.; F. B. I. i. 87; E. D. ^- 545. *Uvaria villosa* F. I. ii. 665.
 Behar; Chota Nagpur, common ; N. Bengal, Maldah; °nssa, Khurda.
 A large tree. Hind. Dom-sal; KoL and Santal. Ome.

14. *Alphonsea* Hook. f. & Thorns.

Tall trees; leaves thick, leathery, glabrous, shining. Flowers small or medium » in peduncled fascicles, leaf-opposed or extra- n-xill ar:V* Sepals 3 » valvate, small. Petals 6, 2-seriate, valvate, lar ger than the sepals, subequal or the inner smaller. Stamens n w apj ^T^8, loose; anther-cells contiguous dorsal, connective or d rate i delliscence extrorse. Carpels 1 or more ; style oblong car 6 ?ressed I ovules 2-seriate on the ventral suture, 4-8 in each pei . Fruit of subsessile or stalked ripe carpels.

Lea ^ . namnv . oblo ng> long-acuminate; flowers in fascicled short racemes; pedicels, 5-1 in. long, petals -75 in. long; stipe 1 in., almost as long as ripe carpels.....*ventricosa*.
 Leaves oVate,oblon S> abruptly acuminate ; flowers in dense leaf-opposed fascicles; Pedicels very short; style 2 in., much shorter than ripe carpels*lutea*.

25 - ALPHONSEA VENTRICOSA Hook. f. & Thorns. ; F. B. I. i. 89.
Uvaria ventricosa F. I. ii. 658.
 Chittagong.

A tall tree; leaves 6-10 in. long.
 2b -ALPHONSEA LUTBA Hook. f. & Thorns.; F. B. I. i. 89,
Uvaria lutea F. I. ii. 666.
 Orissa.
 A tree ; leaves 3-5 in. long.

15. Artabotrys B. Br.

Scandent shrubs; leaves shining, glabrous. *Flowers* solitary or fascicled, on woody hooked recurved peduncular branches. *Sepals* 3, valvate. *Petals* 6, valvate, in two series, with concave bases, and flat subterete or clavate spreading. *Stamens* numerous; oblong or cuneate, connective truncate produced; anther-cells dorsal; dehiscence extrorse. *Carpels* many; style oblong or columnar; ovules 2, collateral, erect. A head of berry-like free ripe carpels.

Flowers over 1-5 in. long, solitary or geminate on the hooked peduncle; petals broad-lanceolate, pubescent near base when young; carpels 1-5 in. long. *odoratissima*.
 Flowers about 1-5 in. long, numerous on the hooked peduncle; carpels cylindrical or subclavate, grey-pubescent throughout; carpels long. *suaveolens*.

27. ARTABOTRYS ODORATISSIMUS K. Br.; F. B. I. i. 54; E. A.

A. 1431. *Uvaria odoratissima* F. I. ii. 666.

Planted in gardens, especially in C. Bengal.

A climber. *Beng.* Kantali-champ, from the resemblance of its odour to that of the *Jak.*

28. ARTABOTRYS SUAVEOLENS Bl.; F. B. I. i. 55; E. A.

A. 1434.

Chittagong.

A climber.

16. Cananga Bumph.

Tall trees, with large leaves. *Flowers* large, yellow, solitary or fascicled, on short axillary peduncles. *Sepals* 3, ovate or triangular, valvate. *Petals* 6, valvate, in two series, subequal or the inner smaller, long, flat. *Stamens* numerous, linear; anther-cells close together, extrorse, connective produced as a lanceolate process. *Carpels* many; style oblong; stigma subcapitate; ovules many, 2-seriate. *Fruit* a head of berry-like free ripe carpels. *Seeds* numerous; testa crustaceous, sending numerous spine-like processes into the albumen.

29. CANANGA ODORATA Hook. f. & Thorns.; F. B. I. i. 56; E. C.

C. 271. *Uvaria odorata* F. I. ii. 661

Planted in gardens especially in C. Bengal.

A tall tree.

17. Unona Linn.

T^{il} **5**^{ees} or erect or climbing shrubs. **JFoMw*** usually solitary, **a**^{ry} **af**-opposed, or terminal. & **pob** 3, valvate. *Petal** 6, **2**^{riate}, valvate or open in bud, sometimes the inner series 0. *Stamens* numerous » cuneate ; the anther-cells linear, apex of **connective** **truilcate** or rounded; dehiscence **extrorse**. *Carpels* many ; **style** ovoid or oblong recurved grooved; ovules 2-8 in each, **I**^s **late** rarely sub-2-seriate. *Fruit* of many ripe carpels, usually **el**⁰ **ngated** and constricted between the seeds.

Petals 6, 2-seriate :—

- Climb**^{der} ing; outer petals under 1-5 in. long; peduncles 2-fld., short, **5** in. long..... *Dmudii*.
- h**^J **u** % ; outer petals over 2 in. long; peduncles 1-nU, slender, from **1**^{*} **m**. long *discolor*.
- lon**^s 3, 1-seriate, the inner series wanting; a slender tree ; petals 6 in. **g**; **P**^{uncles} slender, often very long, up to 10 in. *lovffijlor*"-

3^{on} **UXONA DUNALII** Wall.; F. B. I. ii. 58.

. Chittagong.

31 **TT**^{Alar} **e** glabrous climber.

l **UNONA DISCOLOR** Vahl ; F. I. ii. 669; F. 33. I. i. 59.

Vvaria cordifolia F. I. ii. 652.

C-Bengal; Orissa; Chittagong.

32. A spreading branching shrub.

UNONA LONGIFLORA Roxb.; F. I. ii. 668; F. B. I. i. 61.

(Chittagong.

A slender tree.

18. Polyalthia Bl.

T^{ic} **S** or 8 **hrilbs** - *Flowers* solitary, few or many, in axils of **pr**^g **esen*** or of fallen leaves, or on woody tubercles, or extra-axillary. *Wals* 3, valvate or sometimes subimbricate. *Petals* 6, 2-seriate. **v**^a **v**^{ate} » flat or the inner vaulted, ovate or elongated. *Stamens* **merous**, cuneate, anther-cells remote ; dehiscence **extrorse**. **ar** **Peh** many; style usually oblong; ovules in each 1-2, basal **erect** > or subbasal ascending. *Fruit* of berry-like 1-seeded ripe carpels.

u^l **anches** and leaves glabrous; flowers many, fascicled; petals **linear** ;

* * « • ovoid :- [p. 204]

[i^{polyalthia}

Leaves narrow-lanceolate, apex tapering, margin undulate; ^{P ^ al:} ^{ipe} th [®] ⁱⁱ [^] ^{IV/} ^{long}
•75-1 in. long; carpels fleshy, black, .75 in. long, exceeding

Leaves ovate-oblong, apex acute, margin not waved; petals 1-^{1.25} in.
long; carpels fleshy, orange, 1-5 in. long, equalling their stipe ^{simiaru} [^]

•Branches and leaves beneath pubescent; flowers few on woody tuberc ^{les:}
petals ovate, .5 in. long; carpels spherical:—[p. 203]

Leaves lanceolate-acuminate; peduncles 1-3-fld., tubercles ^{a X ^} ^{alaly;}
carpels .4 in. across, dark red, their stipe 1 in. long.....^{UaryJ}

Leaves oblong-obtuse; peduncles 1-2-fld., tubercles ^{extra**} ^{eror/}
carpels .25 in. in diam., their stipe .25 in. long.....

33. POLYALTHIA LONGIFOLIA Benth. & Hook. f.; F. B. I-^{PS)} ^h
E. D. p. 1052. *Uvaria longifolia* F. I. ii. 664.

Planted, especially as an avenue-tree, in C. Benga¹ [^]
Tirhut.

A tall tree. *Hind.* and *Behar.* Asok; -Be*0- D^{ebdfiU;}
TJriya Asoka, ásup&l, debdaru.

34. POLYALTHIA SIMIARUM Benth. & Hook. f.; F. B. L *^{63*}
Chittagong; Orissa, Khurda; N. Bengal, Duars.

A tree. *Vernac.* Boga-kainla (*Duars*); *Vriya* Mong¹ ^h ^{63;}

35. POLYALTHIA CERASOIDES Benth. & Hook. f.; F. B. I-^h ^{63;}
E. D. P. 1048. *Uvaria cerasoides* F. I. ii. 666.

Behar; *Chota Nagpur*; W. Bengal, common; *C* *Benge*
and E. Bengal, only in thickets near villages.

A tree. *Hind.* Kudumf; *Santal.* Panjon.

36. POLYALTHIA SUBEROSA Benth. & Hook, f.; F. B. I. J^{bJ;} ^{r>}
E. D. P. 1058. *Uvaria suberosa* F. I. ii. 667.

Behar; N. and W. Bengal, common; C. Bengal, occasion[^]
A shrub or small tree. *Beng.* Bara-chali; *Santal.* Sa[^]
omé.

19. Mitrephora Bl.

Trees; leaves leathery, strongly nerved, plicate in bud. *Flowers*
hermaphrodite or sometimes l-^{sexual}, terminal or leaf-^{posed}.

Sepals 3, orbicular or ovate* ^{r>*} ^I [^] ⁱ [«] [«] ^{outer}
ovate thin, the veined ^{inn^pv+u:rti} ^{inner} ^{thicker}, clawed, vaulted, connate ^{above.}

Stamens numerous, oblong-on, ^{^o*} 4. ^{£)} [»] ^{remote;}

T, ^{uulor} ^g ^{cuneate} at apex; anther-cells ^{clavate,}

dehiscence extrorse. *Carnrf**, ¹¹ [»] [»] [»]
^{oa} [»] [«] [»] [»] many, oblong; style oblong or

luna.

ASOSAVK.X.

**

furrowed on inner face; ovules 4 or more, 2-seriate on the ventral side. free ripe carpels. Fruit of stalked or sessile-gibbous or obovate.

37- MELASTOMACEAE TOMENTOSA Hook. f. & Thoms. J. F. B. I. 1-16.

Chittagong.

A. tree.

20. Melodorum Dunal.

climbing; with strong parallel nerves from the base. Wo'ers terminal, axillary, or leaf-opposed, solitary, or Prolate, 3-gonous in bud. Sepal* 3, valvate, connate, 6, Linate, valvate, outer subconvex or concave, inner triquetrous above hollowed below on the inner face; mucous; anther-ovule contiguous; dehiscence extrorse; ovules 2 or more. Fr. of berry-like ripe.

Flowers 1-25 in. long, axillary or in terminal W.M. 1-4. Petals oblong-acuminate, tomentose outside, hoary.

Flowers 25 in. long, in 3-7-fld. inflorescences; outer ovate, silky outside, faintly puberulous.

38- MELODORUM RUBIGINOSUM Hook. f. & Thoms.; J. F. B. I. 1-16. Chittagong.

A large climber.

39- MELODORUM POLYANTHUM Hook. f. & Thoms.; J. F. B. I. 1-16. Chittagong.

A large climber.

21. Anona Linn.

Tree or shrub. inflorescence solitary or leaf-opposed. Sepals 6, 2-seriate, the inner much smaller than the outer, the outer thick. Petals numerous; anther-cells narrow, contiguous at base. Connective ovoid. Carpels many, subconnate; ovules 8 or more, erect. Fruit a many-celled globose berry of confluent ripe carpels.

Leaves usually obtuse; peduncles generally solitary; projecting convex ovoid areoles.....

Leaves acuminate; peduncles generally 2-4 together ; with flat 5-cornered areoles.....

[Anona.
fruit ovoid with
squamose.
stipules globose
reticulate.

40. ANONA SQUAMOSA Linn.; F. I. ii. 657 ; F. B. 1. L

A. 1166.

Near villages, planted and sometimes self-sown, A small tree. Beng. Ata.—Custard Apple of Eng India; Sweet Sop of English in West Indies. I. 1. ^'

41. ANONA RETICULATA Linn.; F. I. ii. 657 ; F. *

E. D. A. 1158.

Near villages, planted and oftener self-sown, A small tree. Santal. Gom ; Beng. Nona.—Heart; Custard Apple of English in West Indie .

Order Y. MENISPERMACE^.

Shrubs or undershrubs, climbing or twining rarely leaves alternate, entire or lobed, usually palminerved, peltate ; stipules 0. Flowers 1-sexual dioecious, small sometimes 3-bracteolate, in racemes, cymes or fascicles, Disk 0. Sepals 6 (rarely 1-4 or 9-12), almost always cate, 2-seriate, the outer whorl often minute. Petals 0, (rarely 5-1 or 0), free or connate, Stamens hypogynous, 1 opposite each petal; filaments free or connate ; anthers usually adnate; dehiscence longitudinal, extrorse or later introrse; rudimentary carpels minute or 0. ? Staniiinode Carpels 3 (rarely 1, or 6-12), free; style terminal, divided; ovule 1 or rarely (Fibraurea) 2, on the ventral amphitropous rarely anatropous. Fruit of drupaceous carpels with a subterminal or (from excentric growth) style-scar. Seed campylotropous, hooked or reniform; often intruded in the concavity; albumen ruminant or 0; embryo small or large, curved or rarely straight.

mento^{ge>},
frequen^{ly}
minute[>]
or^r -[^] a^vy.
9^r so[^] ri-
fre[®] 2^{geriate}
o^o, usually
s^u 2^c hypogynous^{^^}
1^{ra}ly
or^o.
& 1^{ra} gutu[^]
s[^]
us^{us}
ubba^{flftl}
er^{do}
nifol^{u j}

* \$ stamens connate :— [p. 207]

f 3 anthers G; f ? perianth-segments all free :—[p. 207]

J ? carpels 3, accompanied by staminodes :—[p. 207]

4 ? petals 6; sepals 6 ; ? staminodes 6.....**ara^{bseff*}

6 ? petals 0; sepals 6; ? staminodes 9.....* n a^{irtf}

- * » carpel 1, staminodes 0; j petals 3-5; sepals 6-10; ? petals J~5; sepals 3-5 [p. 206].....**Stephania.**
- † <* anthers 4 ; petals connate 4 ; sepals 4 ; ? petal 1; sepal 1 [p. 206] **Cissampelos.**
- *
 - ♂ stamens free ; perianth-segments free ; capels 3 or more:—[p- 206]
 - * ? Petals 6 :-
 - * ? sepals 6 :—
 - * anthers 9.....**Pycnarrhena.**
 - * anthers 6:—
 - c«-rpels in male 0 :—
 - <? stamens with thickened apices, anthers dehiscing obliquely;
 - * carpels 3, styles forked.....**Tinospora.**
 - <* stamens with subglobose anthers dehiscing transversely;
 - ? carpels 3-6, styles cylindrical.....**Cocculus.**
 - Carpels in male 3, rudimentary; cT stamens subcylindric, anthers dehiscing vertically; ? carpels 9-12, styles subulate **Tiliacora.**
- 4 ♂/1 Sepals 9-12 5 * anthers 6, bursting obliquely **Haematocarpus.**
- M-) petals 2; sepals 8; cT anthers 4.....**Antitaxis.**

2& Parabaena Miers.

A Climber with milky juice. Flowers in axillary dichotomous cymes. Sepals 6, subequal. Petals much smaller. S Anther 6, horizontal, surrounding the top of the staminal column; dehiscence transverse. * Stamines 6, cylindrical. Carpels 3, styles subulate, recurved. Fruit drupaceous, ovoid, style-scar subventral. Endocarp subglobose, spinulose on the back, concave ovate. Seed flattened, curved, ventrally concave; cotyledons 2, 1/2%, spreading.

- PARABAEANA SAGITTATA Miers; F. B. I. i. 96.

Chittagong.

A- climber with milky juice, and cordate or sagittate leaves.

23. Anamirta Colebr.

A climbing shrub. Flowers panicled. Sepals 6 with 2 adpressed bracts * Petal* 0. * Anthers sessile on a stout column, 2-celled; dehiscence transverse. ? Staminodes 9, clavate, 1-seriate. Carpels 3 on a short gynophore; stigma subcapitate, reflexed. Fruit drupaceous on a 3-fid gynophore, obliquely ovoid, gibbous on the back, style-scar subbasal; endocarp woody. Seed

[Anamirta.

globose, surrounding the intruded pericarp; albumen b^{ral} lar,
horny; embryo curved, cotyledons thin.

43. ANAMIRTA COCCULUS W. & A.; F. B. I. i. 98; E. D-

Memspermum Cocculus F. I. iii. 807.

Orissa.

A climbing shrub, with ovate, cordate leaves.

Ktikniiri.

A. JOSB.

Vernac.

24. *Stephania* Lour.

Climbing shrub; leaves usually peltate. Flowers n¹ H&T.^v
umbellate cymes. <r Sepals 6-10, free, ovate or obovate. Petals
3-5, obovate, fleshy. Anthem 6, connate, encircling the top of the
staminal column; dehiscence transverse. 9 Sepals o⁵. Petals
as in <*. Stamnodes 0. Carpel solitary, style 3-6 part*^t Fruit
drupe-like, glabrous; endocarp compressed, horseshoe-shaped.
tubercled on the back, hollow and perforated on the sides. Seed
almost annular; cotyledons long, slender.

44. STEPHANIA HERNANDIFOLIA Walp.; F. B. I. i- *103^m, ^# i>.

S. 2794. *Cissampelos hernandifolia* F. I. iii- 842.

Common in hedges and thickets.

A slender climber with somewhat peltate leaves. Beng.

A'kanádi, nimnkha.

25. *Cissampelos* Linn.

Shrubs, suberect or climbing; leaves often peltate, Flowers
cymose. Sepals 4, rarely 5-6, erose. Petals 4, connate. 1^{tl}
4-lobed cup. Anthers 4, connate, encircling the top of the
staminal column; dehiscence transverse. ? Flowers i^{acem}ose,
crowded in axils of leafy bracts. Sepals 2, petals 0; oi^{sepal} j
and pet^U 1, 2-nerved, adnate to the bracts. Stanrinot-
CaripeZ 1; style short, 3-fid or 3-toothed. Fruit dru^{aceous},
ovoid, style-scar subbasal; endocarp horseshoe-shaped, ed,
pressed, tubercled on the back, sides hollowed. Seed cui^{#v}
embryo slender with narrow cotyledons.

45. CISSAMPELOS PAREIRA Linn.; F. B. I. i. 103; E. P-

C. Caapeha F. I. iii. 842. *C. convolvulacea* F. I. #.

Behar; W. Bengal; Chota Nagpur.

A climbing plant with generally peltate leaves; the fern
racemes with leafy imbricated bracts. Santal Tejo

Malla; Benrj. Ekleja.

C. 1205.

842.

^e

26. Pycnarrhena Miers.

Shrubs, suberect climbing. Flowers axillary, fascicled or paniced. Sepals 6 with 3 bracts, inner larger orbicular. Petals 6, small, lobed. Stamens 9, filaments very short; anthers subdidymous; dehiscence transverse. ? Flower unknown. Fruit drupe-like, broadly oblong, slightly gibbous; style-scar lateral; endocarp subreniform. Seed slightly concave ventrally; albumen 0; cotyledons oblong, very thick.

46. Pycnarrhena PLKNIPOBA Miers; F. B. L. i. 106.

Chittagong.

Climbing shrub. Vernac. Langadu (Chittagong).

27. Tinctoria Miers.

Climbing shrubs, flowers in axillary or terminal racemes or panicles. Sepals 6, 2-seriate, inner membranous larger. Petals 6, small. Stamens 6, filaments free, tips thickened; anthers 2-lobed, dehiscence oblique. ? Staminodes 6, clavate. Carpels 3, bifid. Fruit of 1-3 drupes convex above, flat below; endocarp rugose, keeled on the back, intruded. Seed 8-angled ventrally or curved round the endocarp; albumen ruminant below; cotyledons leafy.

Leaves orbicular, cuneate somewhat 3-lobed, pubescent above, tomentose beneath; drupes orange-yellow. tomentosa. Leaves orbicular, cuneate, glabrous, not lobed; drupes red. cordifolia.

47. Tinctoria TOMENTOSA Miers; F. B. L. i. 96. Menispermum tomentosum F. I. iii. 813.

In hedges and thickets, rare.

48. Climbing shrub. Vernac. Padmo-gulanchá.

Tinctoria CORDIFOLIA Miers; F. B. L. i. 97; E. D. T. 470. Menispermum cordifolium F. I. iii. 811.

In hedges and thickets everywhere, very common.

An extensive climber. Vernac. Gulanchii.

28. Cocculus DC.

Shrub, panicled, suberect or climbing, rarely suberect. Flowers small. Sepals 6, 2-seriate, outer smaller. Petals 6, smaller, subauriculate. Stamens 6, embraced by the petals; anthers 2-lobed; dehiscence transverse. ? Staminodes 6 or 0. Carpels

3-6, styles usually cylindric. *Fruit* of laterally compressed drupes; endocarp horseshoe-shaped, keeled and tuberculate sides hollowed. *Seed* curved; albumen fleshy; embryo annular with linear cotyledons. [Cocculus. ompr ed late ^ve, o annular c. 1453.]

49. COCCULUS VILLOSUS DC.; F. B. I. i. 101; E. V.

Menispermum hirsutum F. I. iii. 814.

Behar; W. Bengal; Chota Nagpur: common ground. in waste

A tomentose climber. Vernac. Huyer.

29. Tiliacora Colebr.

Shrubs, wide-climbing. *Flowers* in axillary panicles, polygamous. *Sepals* 6, 2-seriate, outer much smaller. *Stamens* 6, filaments subcylindrical; anther minute, cuneate. *Carpels* 3, rudimentary. *Carpels* 9-12; styles short subulate, fruit of obovoid celled subcompressed drupes with subbasal style-scar, thin, obscurely ribbed, laterally grooved. *Seed* hooked, oily, ruminant; cotyledons linear, fleshy. T. 456.

50. TILIACORA BAGBMOSA Colebr.; F. B. I. i. 99; E. V.

Menispermum pohjcarpum F. I. iii. 8.

In hedges and thickets everywhere, but especially in

C. and E. Bengal. bhft*

A large glabrous climber. Hind. Bhaga-mushada, luta; Beng. Tiliacora.

30. Haematocarpus Miers.

A strong glabrous climber; leaves very coriaceous. *Flowers* in axillary racemes or panicles. *Sepals* 9-12, large bracts, large. *Petal*s 6, minutely auriculate at the base. *Stamens* 6; anther-cells 2, discrete, connective hood-like dilated; *Stamens* oblique. Rudimentary *carpels* 3, minute. *Sepals* 6, small basal bracts. *Petal*s 6, greenish, opposite the sepals. *Carpels* 6; stigmas ligulate, reflexed. *Fruit* of 1-4 large ovoid drupes with blood-red juicy flesh, style-scar subbasal; *Seed* coriaceous, oblong, adherent, fruit oblong; albumen 0; embryo very large, with thick semicylindric cotyledons. J. hier ^ ^ 5 # a m en(jC th Q ** ^ a p ^ d o pry

51. HEMATOCARPUS THOMSONI Miers; F. B. I. i. 106.

Chittagong.

A strong glabrous climber with oblong leaves ; the fruits like bunches of grapea, the endocarp blood-red.

31. Antitaxis Miers.

^ erect shrub; *leaves* penninerved, coriaceous. *Flowers* in ***** fascicles. * *Sepals* 8, in decussate pairs ; outer small, the n*** obovate, the 4 inmost large imbricate orbicular. *Petals* 1, obov*te. *stamens* 4, filaments clavate; anthers 1-celled, sub-
Woboa, dehiscence transverse. ? ^ m ^ rs unknown. *Frwitj**
^ subglobose drupes with ventral style-scar; endocarp thin, fra gille, ^ breniform. *Seed* subglobose, ventrally concave; albumen
Q? Cotyledons oblong, slightly incurved, thick, semieylindnc.

52. ANTITAXIS CALOCARPA Kurz.

Chittagong.

A. shrub.

Order YI. BERBERIDE JE.

, ^ fttbg, armed or not, sometimes climbing, leas often herbs;
**** usually scaly. *Leaves* alternate, simple or compound; stipules
rare [Berberis sometimes). *Floivers* regular, often globose, yellow
7 white, hermaphrodite or 1-sexual, in panicles or racemes or
volic ary. *Diak Q.* *Perianth* of similar sepals and petals hypo-
8 ^ us, caducous, in 2 or more 2-3-, rarely 4-nate whorls, imbricate
<* with the sepals only valvate, very rarely 0. *Stamens* usually
one opposite each petal; anthers erect, adnate; filaments free or
eo ^ ate; dehiscence longitudinal, extrorse or lateral, or by valves,
revolute or ascending. *Carpels* 1 or 3, rarely 6-9, free, oblong, style
or short, stigma peltate or oblong or conical; ovules 2 or more,
Da*al erect, or 2-many-seriate on the ventral suture, or many-
*iate or scattered on the carpellary wall, anatropous with a
v**ka! raphe rarely orthotropous. *Fruit* of berry-like fleshy, or
dry ^ dehiscent, or capsular dehiscent ripe carpels. *Seed* crusta-
ceoly» membranous or fleshy; albumen firmly fleshy; embryo
minu*« OY elongated.

32. Berberis Linn.

S ^ b s with yellow wood; *leaves* pinnate or simple and then
fas ci ^ d in the axils of 3-5-partite spines. *Flowers* jregular,
he r maphrodite, yellow, solitary fascicled or racemoBe. *Sepals* 6,
2-sei> iate, imbricate, with 2-3 adpressed bracts. *Petals* 6, 2-seriate,

imbricate, with often 2 basal glands inside. *Stamens* 6, ^{free:} anther-cells opening by recurved valves. *Ovary* simple, ^{stigma} peltate, sessile or with a short style; ovules few, erect basal. *Fruit* berry-like, few-seeded.

53. BERBERIS ASIATICA Roxb.; F. B. I. i. 110; E. I. ^{B-43?1.}
Chota Nagpur, on Parasnath, near the top.
A shrub.

Order YH. NYMPHfiACEIE.

Herbs, perennial, aquatic; *leaves* usually floating ^{radical,} rarely on floating stems, often peltate, in bud involute. ^{Flowers} solitary on naked scapes. *Disk* fleshy and enveloping the ^{eM1*^} sometimes also adnate to the tubular base of perianth, ^{<* "} *Perianth* of many spirally imbricate segments, gradualy ^{V***} from sepals to petals and petals to stamens or the whorls ^{d***» ct} with *sepals* 3-5, *petals* 8-5 or more, and *stamens* 6-many, ^{» " "ee} hypogynous, or with the inner or all perigynous, ^{le» dWn} epigynous, on the disk. *Stamens* with filaments continued ^{W » e} connective; anthers erect with adnate cells; dehiscence longi ^{W^{3,1,1}} introrse or extrorse. *Carpels* 3 or more in one whorl, free, ^{o* «o°\} often adnate to disk as a many-celled ovary, tardy (*Neh'* ^{hU n} discrete scattered on the top of the torus; styles as ^{tattf "} carpels with stigma decurrent or peltate; ovules many or ^{» ff,} scattered on the carpeUary wall, or solitary pendulous ^{from t» e af*} of carpel, orthotropous or anatropous. *Vruit* of indehiscent ^{«Pc} carpels, free or concrete as a pulpy or fleshy berry-like mass. *Stf's* naked or with an arillus; albumen floury with a cavity in ^{«Jf»} the embryo is partially immersed, or 0; embryo with ^{*<*} cotyledons and usually a large plumule.

Carpels confluent with each other or with the disk; ovules many; seeds albuminous:—

I ^ u I T ^ T ^{18tameDS half s} »P''-i°r, inserted on the disk v*i<* *S
confluent with the carpels; plants unarmed.....N y m p ^
SepalsJohn ,, be oW and confluent with the disk in which the e«P*
«. enclosed, petals and stamens superior; plants armed with ^{spines}

Euryale.
Carpels discrete, irregularly scattered, sunk in pits of the turbinate disk;
sepals, petals, and stamens inferior; ovules 1-2; seeds without albumen;
plants unarmed**Nelumbium.**

33. Nymphaea Linn.

Large aquatic herbs, with creeping rootstock. Flowers large floating on long radical scapes. Sepals 4, adnate to base of the disk. Petals many-seriate, inner successively wormed into stamens, adnate to disk. Stamens numerous; Petaloid; anthers small linear; dehiscence introrse. many, 1-seriate, sunk in the fleshy disk and forming with many-celled ovary crowned by the connate radiating furrowed ovules numerous, anatropous. Fruit a spongy berry, lying under water. Seed very small, enclosed in a fleshy

Leaves 8h Mpl y sin ately toothed; sepals ribbed ; anthers without appendages :—

Flowers white I<otu* rilhra,

Leaves entire or obtuse y sinuate; sepals many-veined but not ribbed ;

anthers with long appendages; stigmatic rays ending in short horns without appendages :-

Flowers pale blue, 1-2 in. across**«"•

Flowers darker blue, 4-5 in. acrossstellata var. major.

51 NYMPH^EA LOTUS Linn.; F. H. I. i. 114; E. D. N. 200. ^- esculenta F. I. ii. 578.

Everywhere in ponds and ditches. Beng. Kambal. Two forms; one with glabrous, one with pubescent leaves.

ijj< N*MPH*A RUBRA Roxb.; F. I. ii. 576.

Less common than the white-flowered plant though equally widespread. Beng. Rakto-kambal.

o6- NYMPH^A STELLATA Willd.; F. I. ii. 579; F. B. I. i. 114; E- D. N. 209.

^ Everywhere in ponds. Beng. Nil-padma.

o6/2. Var. MAJOR Voigt. N. cyanea F. I. ii. 577.

Less common than the paler-flowered variety. Beng. Bara nil-padma.

34. Euryale Salisb.

Densely prickly aquatic herbs, with thick rootstock; leaves orbiclar, corrugate. Flowers partially submerged. Sepals 4, erect, inserted on the edge of the thalamus above the carpels. numerous, 3-5-seriate, shorter than the sepals.

Stamens numerous, many-seriate, fascicled in bunches^{o^ 8} filaments linear. *Ovary* 8-celled, sunk in the dilated^{^ ^} top^{^ ^} thalamus; stigma discoid, depressed, concave; ovules few, ^{with the} *Fruit* a spongy berry, armed externally and crowned persistent sepals. *Seeds* 8-20, with a pulpy arillus.

57. EURYALE FEROX Salisb.; F. B. I. i. 115; E. 1). E. 39#

Anneslia spinosa F. I. ii. 573.

E. Bengal, in jhils, very common; Tippera; Chi

C. Bengal, rather rare.

A densely spiny aquatic herb. *Hind** and Beng-

Uriya Kanta-padma.

35. Nelumbium Willd.

A large erect aquatic herb with milky juice and stout^{^ ^} creeping rootstock; *leaves* of young plants floating, of older raised^{^ ^} above the water, peltate. *Flowers* large. *Sepals* 4-5, inserted^{^ ^} of scape, passing into petals, caducous. *Petals* many-se^{^ ^} numerous hypogynous, passing into stamens, caducous. *Stamens* many-seriate, hypogynous, caducous; anthers with a clavate^{^ ^} appendage, *fiarpels* many, each 1-celled, discrete, a^{^ ^} in the flat top of the obconic fleshy thalamus, fixed laterally^{^ ^} the cavities; style very short, exserted, stigma terinina^{^ ^} e in the ovules 1-2, pendulous. *Fruits* of ovoid ripe carpels, loose^{^ ^} in the cavities of the enlarged spongy thalamus; pericarp long^{^ ^} *Seeds* filling the carpels, testa spongy, without albumen; ^{thick fleshy.}

58. NELUMBIUM SPECIOSUM Willd.; F. I. ii. 647; F. * I. i. 116; E. D. N. 39.

Everywhere in ponds.

A large water-plant; leaves peltate, floating^{^ ^} plants. There are two forms, one with pink^{^ ^} flowers, common; the other with white flowers, ^{usual.}

Hind. Kanwal; *Beng.* and *Uriya* Padma.

Order VIII. PAPAYERACEJE.

Herbs, perennial or Annual, rarely shrubs; juice vati^{or} coloured. *Leaves* radical or alternate or both; stipu^{les} *Flowers* often showy, regular, hermaphrodite, usually nod^{ding} in bud. *Disk* 0. *Sepals* 2, rarely 3, hypogynous, imbricate,

ly caducous. *Petals* 4, rarely 6, 2-seriate, very rarely more and
 sev^l *hypogynous*, large, crumpled, very caducous. *Stamens* many,
 ant^l *Seriate* or spiral, hypogynous; filaments slender, innate;
 m^l *erect*; dehiscence longitudinal, lateral. *Carpels* 2 or
 or *unite* in a superior 1-celled ovary with parietal or more
 ven^l *intruded* Placentas, or 2-celled (*Glaucium*) by a pseudo-
 J^l *or* 2- or more-celled from intrusion of the placentas as far
 Pla^l *axis*; Style 0, or short, rarely long. *S*' stigmas always alternate with
 - *centas* though sometimes the adjacent halves of stigmas connate
 and *opposite* the placentas; ovules many-seriate parietal,
 Ver^l *rarely* (*Boccon*) solitary, anatropous with a lateral raphe.
 * *W* *a capsule* > completely or partially dehiscent by valves or
 pores, *seeds* many, small, frequently caruncled; albumen fleshy
 or *embryo* minute.

Se^l *petals* 4 : capsules globose; the stigmas sessile, radiating from
 its *re. Papaver.*
 Sepa^l *3, petals* : capsules oblong; the stigmas plicate capitate, supported
 by *a short distinct style. Argemone.*

36. Papaver Linn.

Annual or perennial herbs with milky juice ; *leaves* lobed or cut.
 Far *on long* Peduncles. *Sepals* 2, rarely 3, caducous. *Petals* 4,
 c^l *6* 2-seriate, caducous. *Stamens* numerous, hypogynous.
carpels United in a 1-celled ovary with 4 or more intruded
 placentas, sometimes several-celled by complete intrusion of
 placentas as far as axis ; style 0, stigmas connate as a discoid or
 pyramidal *Star with rays* composed of conjoint half-stigmas oppo-
 S *each* *P*l^l *centa*. *Fruit* a short, usually truncate capsule, opening
 by *10* *valves* below the persistent stigma.

PAPAVER SOMNIFERUM Linn.; F. I. ii. 571; F. B. I. i. 117 ;
 E-1). P. 87.

Tirhut, and Behar, cultivated only.
 A glabrous and glaucous annual, with milky juice; only
 white-flowered forms are cultivated in our area. Beng.
 Pasto.—The Opium Poppy.

37. Argemone Linn.

Annual herbs, erect, prickly; *leaves* variegated, lobed, lobes
 oresent. *Flowers* in few-flowered cymes, with leafy bracts.
Sepals 5, very rarely 4, caducous. *Petals* 6, very rarely 8,

2-seriate, caducous. *Stamens* numerous. *Carpels* united in a 1-celled ovary with 3-6 parietal placentas; style distinct, stigmas connate, lobes siibradiating alternate with placentas, the foil at line of union of adjacent stigmas suberect. *Fruit* a long somewhat pointed capsule, opening about one-fourth of its length by triangular valves alternate with the placentas and opposite stigmatic lobes.

60. ARGEMONE MEXICANA Linn.; F. I. ii. 571; F. B. I. 11, E. D. M. 1351.

Everywhere in waste places.

A prickly annual with yellow juice, yellow prickly leaves with white veins. *Beng.* Bara shu-K *Santal.* Gokhula janum.

Order IX. FUMARIACEJE.

Herbs, annual or perennial; juice watery. *Leaves* alternate or opposite, usually much divided; stipules 0. *Flowers* regular, hermaphrodite, usually in racemes. *Dish* 0. *S*P** small, scale-Uke, caducous. *Petals* 4, 2-seriate, outer large or both gibbous or spurred, inner always like each usually very unlike outer, narrower, erect with often cohering *Stamens* rarely 4, free, opposite the petals, usually diadelph 2 phalanges opposite the outer petals, each phalanx with 2-celled and 2 lateral 1-celled filaments that are free only apex; dehiscence longitudinal, lateral. *Carpel* superior 1-celled ovary with parietal nerviform placentas of one may (*Fumaria*) be sterile; style short or long, stigm or lobed; ovules 2-many, amphitropous, 1-2-seriate on placentas, very rarely solitary on each or on only one *Fruit* a 2-valved many- or few-seeded capsule, or indeh 1-seeded, rarely 2-seeded, and nut-like. *Seed* small, strophiolate; albumen fleshy; embryo minute.

38. *Fumaria* Linn.

Annual, rarely perennial, usually branched, often scandent herbs; leaves much divided, with narrow segments. *Flowers* small in terminal or leaf-opposed racemes, irregular, ben phrodite. *Sepals* 2, small, scale-like, caducous. *Petal* 4, 2-seriate, the 2 outer dissimilar, anterior c. on m. v. posterior gi W.

or spurred at the base, the two inner lateral simile, long-clawed, keeled, with usually cohering tips. *Stamen*, diadelphous in anterior bundles, each with a central 2-celled and two lateral 1-celled anthers. *Carpels* 2, connate in U-celled ovary with usually 1 parietal fertile placenta; style filiform, stigma entire or slightly lobed; ovules normally 1 near base of fertile placenta. *Fruit* a small globose indehiscent 1-seeded nutlet.

⁶¹ - FUMARU PARVIFLORA Link. ; F. I. iii. 217 ; F. B. I. i. ^E - D. P. 723.

In fields and gardens, not uncommon.

A small branched annual weed with much-divided glaucous leaves. *Hind.* Pit-pâpra; *Beng.* Ban-sulpha.

Order X. CRUCIFERffi.

^H<*bs, annual or perennial, rarely undershrubs; juice often pungent. *Leaves* radical in a rosette and cauline alternate; *Puleg* 0. *Flowers* in racemes, rarely solitary axillary or on ^{sca} pedicels. *JHnh* with 4 glands opposite the sepals, or 0. *Sepals* 4, ^f*« imbricate, hypogynous, the lateral pair opposite the placentas often the larger, saccate. *Petals* 4, free, hypogynous, set cross-wise. *Stamena* 6, rarely 2 or 1, or many; 2-seriate, outer whorl of 2 opposite the lateral sepals, inner of 4 with longer filaments in opposite ^{ite} *Stamens* alternate with outer; anthers basifixed, oblong rarely linear or contorted, 2-, rarely 1-celled; dehiscence longitudinal, lateral. ^a *W*» 2, united in a superior ovary 2-celled by a placental replum, ^L 1-celled, or with superimposed cells; style short or 0, stigma ^{*Ple} or with 2 lobes opposite the placentas; ovules 1-^A or many 2-seriate, on opposite sides of the replum, if present, on ^u 2 ^{at} ^{etal} ^P ^{ent} ^{as}, rarely solitary erect, campylotropous or ^{cl} [?] [!] ^{tl} ^o ^P ^U ^s ^{wi} [^] raphe ventral. *Fruit* a 2-celled 2-valved capsule with deciduous valves and persistent replum and placentas, or transversely jointed or indehiscent. *Seeds* small, albumen 0; embryo with large cotyledons foliaceous in germination, radicle incumbent on the back of one or accumbent on edge of both cotyledons.

^{*P} ^d [?] ^p ^o ^{dehisc} ^{*ng} :- [p. 218]

[?] [^] ^s narrow, long :- [p. 218]

[^] ^{ods} bearing seeds and dehiscing throughout their length; ^{sepa} ^B ^{not} Pouched at the base; cotyledons accumbent:—[P-²¹⁸J

[Nat**l *]

Pods almost cylindrical; seeds globose, 2-seriate or 1-seriate; flowers yellow.....

Pods flattened; seeds compressed, 1-seriate; flowers

{Pods with a seedless indehiscent beak projecting beyond sepals pouched at the base ; cotyledons longitudinally incumbent:—[p. 217]

Pods narrow cylindrical or turgid, beak cylindrical or conical; 1-seriate ; flowers yellow or yellow with green veins.

Pods turgid, beak flattened; seeds 2-seriate; flowers yellow with lilac vein3

fPods broad, short; sepals not pouched at base :—[P-

Pods globose; seeds many, small, compressed; bent; flowers (in our species) yellow.....

Pods flattened :—

Pods compressed from back, parallel to expanded few, compressed, cotyledons accumbent; flowers (in

- white.....

Pods compressed laterally at right angles to the very replum:—

Valves of the many-seeded pods not winged; cotyledons bent;' flowers white.....

Valves of the few-seeded pods winged, the tip of pod

Seeds in each cell solitary ; cotyledons incumbent.

Seeds in each cell 4-6 ; cotyledons accumbent.....

*Pods not dehiscing :—[p. 217]

Pods short globose, 2-celled, each cell 1-seeded ; sepals pouched at the base ; white flowers and pods both very small

Pods elongated, terete, hollow or transversely septate; sepals pouched at the base ; flowers yellow white or lilac with purple and pods large

39. Nasturtium R. Br.

Herbs, terrestrial or aquatic, usually branching, hairy; leaves entire, lobed or pinnatifid. Flowers small, rarely white, sometimes bracteate. Sepals short, spreading at the base. Petals short, narrowed at the base, scarcely or 0. Stamens 6, tetradynamous, or 4, or 2. Capsule short, subcylindric; valves faintly 1-nerved ; replum thin; parent; style short stoutish, or long slender, stigma entire 2-lobed. Seeds small, turgid, 2-seriate or irregularly 1-cotyledons accumbent.

Brassica.]

Pods sh^t, broad >> hardly longer than the pedicels ; bracts 0 ...palustre.
Pods lon^o, W > at least twice as lon^{ft}s the pedicels :-

Flowers ^{bracts} ..^{out} *indicum*.
Flowers with leafy bracts.....*intUcum* var. *bengluden**e.

62. NASTURTIUM PALUSTRE DC.; F. B. I. i. 133.

Beh^{fr} > rare; N. Bengal, Maldah; C. Bengal, 24-Pergun-
nahs ; never plentiful.

A^{sr} small herb.

63. NASTURTIUM INDICUM ^>C.; F. B. I. i. 134. *Sinapis*
artcata F. I. i. U. m.

Everywhere, common.

Small herb,

63/2 V *C. BENOHALENSE F. B. I. i. 134.

C. and E. Bengal, more common than the. preceding ;
^ittagong ; also N. Bengal, but rare.

A small herb. *Beng. Bil-rai*.

40. Cardamine Linn.

Herbs, ^{ft} Gn flacci(J, annual or perennial, glabrous or slightly
pubescent. ^{eaves} entire, lobed or pinnatifid to -sect. *Flowers*
white or ^{rarely} yellow. *Sepals* equal at the base,
^{clawed}. *Capsule* narrow linear, compressed,
^{both} 6ndS, midrib distinct, valves subelastis in
dehiscence.
flatt^{rep*Um men} bran^{flatts} ; stigma simple or 2-lobed.

64. CARDAMINE DEBILIS Don. *C. Jiirsuta* Linn. var. *sylvatica*

f • I- i. 138; E. D. C. 549.

^ Bengal, not common.

A weed of the cold weather.

41. Brassica Linn.

Herbs, ^{or} ^pid ^ ^ often a wood ^ rootstock, often biennial; glabrous
erector, sn^{eaV6S largG} ^rate or pinnate > rarely entire. 5 ^ ? ^ a
Clav^{ed}, v^{el} ^{read} in g >> lateral usually saccate at base. *Petals* distinctly
les^{indi} ^{ow} *Capsules* elongate, terete or angular, with a seed-
ke^{led} 1 ^ 1S Cent beak projecting beyond the convex or slightly
where val^{nerved} valves ; replum membranous, in cultivated forms
absorbed ; ^{veS are more than 2} sometimes partially or completely
Seeds ^{gi} 1 ^{S*yle beak} ke^{ed} or ensiform; stigma truncate or 2-lobed.
e ; cotyledons incumbent.

Brassica

Leaves of the stem all narrowed to their bases and not clasping the stem:—

Stems short till the flowering shoots appear; the leaves at stem persisting to form a loose cabbage, stem-leaves not lyrate lobed margins fine-crenate.....*nujosa* var.

Stems elongating from the commencement of growth; leaves base quickly withering, most of the stem-leaves lyrate lobed. As preceding but smaller in all its parts and feral., *juncea* viu.

Leaves of the stem auriculate and stem-clasping:—

Leaves with hairs, at all events when young, and densely covered a pale greyish bloom:—

Roots stout spindle-shaped; pods slender, beaded opposite *caiupeetri** var.

Roots slender tapering; pods stout, not beaded opposite the *campeitri** var.

Leaves without hairs, green above, with a faint bloom beneath lobed and smaller than in the preceding. *Nairn** var.

65. BRASSICA RUGOSA Prain. *Sinapis rugosa* F. I. i. 122.

A crop of the Himalaya from Kamaon eastward. Vernac. Badisha Lai (Kamaon), Pasai (Nepal), J-^a (*Ne₂nil*).

The typical *S. rugosa* has irregularly deeply toothed leaves with a much thickened midrib; it does not occur in the plains*

65/2. Var. CUNEIFOLIA. *Sinapis cuneifolia* F. I. iii. 122.

A cold weather crop in N. Bengal. Beng. Lahi sag-

66. BRASSICA JUNCEA Hook. f. & Thoins.; F. B. i. 157.

E. D. B. 833. *Sinapis ramosa* F. I. iii. 119.

A cold weather crop in all the provinces except Nagpur. ifirad. Rai; Beng. Rai sarisha, ohanchi,]

66/1. Var. AGRESTIS. *Sinapis patens* F. I. iii. 124.

A weed appearing in C. and E. Bengal towards the of the rains. Beng. Bil-rai, keel-rai.

67. BRASSICA CAMPESTRIS Linn. var. OLEIFERA DC.; E. D. B. i. 157.

A cold weather crop in Chittagong only; appears very near the Colza crop of Europe.

67/2. Var. SARSON. *B. campestris* subsp. *Napus* F. B. I. i. 156.

(partly, not *B. Napus* Linn.). *Sinapis glauca* F. B. iii. 118; E. D. B. 817; 855. 2?. *trilocularis* F. B. i. 156. *Sinapis trilocularis* F. I. iii. 121. *B. quadrivalvis* F. B. I. i. 156.

A cold weather crop in all the provinces. *Hind.* Sarson; *Beng.* Swet sarisha. The Sarson or Indian Colza crop.

with ⁿ6le ^ tW0 races of Sarson, viz., Natua with erect pods, and Ulti viz. fndent ones. Each race may be subdivided into two subraces, valv. ^{WUh 2, valved} Pods and a complete replum, and that with 3-4-^{Xatu} pods and the replum ^{^^}complete or absent. The normal 2-valvea ^{bx}* barson is, in part, *B. campestris* subsp. *Napus* of the F. B. I., and U ^{actly} (Sfr, <1) *M. glauca* of the F. I. The 3-4-valved Natua Sarson is ^{qu} ^{HvalDis} of the F. B. L J it is not alluded to in the F > L ThG is as ²ⁿValved Ulti Sarson is neglected in both works; its occurrence ^{Bengal}* ^{matt}<* of fact rare, and its cultivation is confined to Northern of the p and Eastern Behar. The 3-4-valved Ulti Sarson is *B. trilocularis* ^B< I-, and *Sinapis trilocularis* of the F. I.

68. BRASSICA NAPUS Linn., var. DICHOTOMA. *Sinapis clicliotoma* F* I- iii. 117. *B. campestris* subsp. *Napw* F. B. I. i. 156 partly; E. D# B .82<2.

A cold weather crop in all the provinces. *Vernac.* Tori (*Tirhut, Behar*) Latni (*Chota Nagpur*); Sarisha (*C. Be ngat*); Maghi (*E. and N. Bengal*). The Tori or Indian ftape crop ; possibly the same as the Summer Rape of Europe.

42. Eruca Linn.

^H lilac ^, erect and inching; leaves lyrate-pinnatifid. *Floivers* later i ^h violet veins, or yellowish with lilac veins. *Sepals* erect, ^{W i} ^{SaCCate} at the base. *Petals* clawed. *Capsules* ovoid, oblong, to [^] ^{terete} with a large flattened seedless beak, closely adpressed ^{globo} ^{IS; valv} es convex, 3-nerved ; stigma simple. *Seeds* large, ^S ²ⁿseriate I cotyledons incumbent, conduplicate.

69. ERUCA SATIVA Lamk.; F. B. I. i. 158. *Brassicà erucoides* - !• iii. 117.

In c- Bengal, occasionally; Behar, common.

A crop of the cold weather. *Hind,* Tarnmiri; *Beng.* Swet sar; sha.

43. Cochlearia Linn.

* ⁱ ^{JUUal} ^{Ob} Perennial, glabrous, often fleshy herbs ; leaves entire ^{boae} ⁿwhite. *Floivers* white, rarely yellow or *xm* t, *corym-* ^{or} ^{Shortly} racemose, rarely on solitary scapes. *Sepals* ^{spreading,} equal at the base. *Petals* shortly clawed. *Capsules*

globose, ovoid or oblong, valves convex, turgid. Seeds 2-seifo** compressed; cotyledons accumbent.

70. COCHLEARIA FLAVA Ham.; p. B. I. i. 145.

Western Behar and Chota Nagpur, fairly common ; Bengal, on the banks of the Ganges, very rare.

M. Alysaum Linn.

Herbs or sm h f wu ^ * , branched, often rigid, pubescent o» hoary wit h f mirSOT SCalos ! "" -» linear, entire. Ft*«» small, w tf i With short "laws, blade entire or 2-fid- at the b - 7S Filaments off-en turgid or flattene- or obl g; re l membra » o'«. Pejorated or entire; style short or l o n r s f r 6W,flaMened; C0 * y Ie ^ accumbent. 7.1 A J T ALYSSUM MAETIMDM Linn.

In gardens, cultivated in the cold season, but occasion* earning up spontaneously on rubbish-heaps towards the end of the rains.

15- Capsella Linn.

Annual or / ^ » nial small branchi ng herb s, with entire «r pinnatifid ra... f! aVeS - ^ ' ^ small, white, v acemose. W* spreading, equa. av the baSe_ *** TM* ^ hardly clawed. Capsules compressed lateraUy " * r ^ t angles to the., repla* obcordate or cuneate L Oblong o r o ^ valves convex; «pl« 1 icd; very narrow; style cotyledons incumben

72. CAPSELLA BTOSA·PASTOBIS Moench · F . B . L . 159 . E . P . C. 443.

Tirhut ; Behar ; very rare in C.Bengal. A weed of cultivation in th e cold season. The "Shepherd's Purse."

46. Lepidium Linn.

Herbs, divided S it " , 8 ?r ShtUbs, diffuse < * -ect; W, entire or the bl. ! prrB n \ white, braOt168S - ^ B hort, equal »' tetradynamous t 4T -ji T onIy % or absent - , Sta ^ ^ . oblong, rarely Jloh 4T Bometlmes abortive. C«tmite ovate . • g. rarclj globose, usually orbicular, much compressed at rig*

angles to winged, or each cell. tip notched or entire; valves boat-shaped, Plum narrow, membranous. Seeds solitary in

73. *Tropaeolum sativum* Linn.; F. B. I. i. 159.

Widely cultivated in Tirhut, Behar and N. Bengal, small annual herb. Vernac. Halim; alevveri.

4?# Thlaspi Linn*

Herbs, often 5 leaves entire or toothed, the upper Flowers small, white or pale pink, racemose. Petals small. Capsules obcordate, compressed at right angles to replum narrow, boat-shaped, keeled, or winged; replum narrow, seeds 2 or more in each cell;

74. *Thlaspi arvense* Linn.; F. B. I. i. 162.

Bengal. Very rare.

- Weed of cultivation in the cold season.

43. Senebiera DC.

Herbs, diffuse or branched from the base, annual or biennial; flowers small, usually white, racemose, spreading, equal at the base. Petals small. Fruits indehiscent, obovate, laterally compressed; the valves subglobose, not separating; stigma sessile. Seeds solitary in each cell; cotyledons incumbent or the embryo spiral.

75. *Senebiera pinnatifida* DC.

Found in garden ground and by roadsides, but apparently not in C. Bengal; is especially common at Mutlah.

Small diffuse herb; of recent introduction to India.

49. Raphanus Linn.

Herbs, glabrous or roughly hispid, annual or biennial; leaves lyrate-pinnate, flowers yellow or white or lilac with purple veins. Sepals erect, lateral pair 8-clawed. Fruits indehiscent, elongate-terefc, the valves not separating; chamber within

filled with pulp between the seeds or open. *Seeds pendulous, globose; cotyledons induplicate.*

76. EAPHANUS SATIVUS Linn.; P. I. iii. 126; F. B. I. i. 166f

A cold weather crop.

An annual herb. *Beng. Mula. The Kadish.*

Order XI. CAPPARIDEJE.

Herbs or shrubs, erect or climbing, rarely trees. *Leaves* alternate, rarely opposite, simple or palmately compound; stipules herbaceous, setaceous, or spinous, or 0. *Flowers* regular or irregular, usually hermaphrodite, often showy, in terminal corymbs, or axillary in fascicles, or solitary. *Disk* tumid, calyx-tube, or 0. *Sepals* 4 or 6 or 8, free or connate, 1-2-seftly subequal or somewhat irregular, valvate or imbricate or outer ones valvate or open. *Petals* 4, rarely 2 or absent, hypogynous or perigynous, imbricate or narrow and open in bud. *Stamens* 4 or more, hypogynous or perigynous; filaments filiform, free or connate below; anthers oblong, subdorsifixed; dehiscence longitudinal laterally. *Carpel** 2 or more, connate in a 1-locular ovary with 2-4 placental placentas, sometimes 2-8-locular from septa arising from the placental centas; sessile or at the apex of a short or long gynophore; style usually short or 0; stigma depressed or capitate; ovules in 1-inany-seriate on the placentas, rarely solitary, amphitropous or campylotropous. *Fruit* a 1-locular elongated capsule, or berry-like, rarely drupaceous and indehiscent, and globular or oblong cylindrical. *Seeds* reniform or angular; albumen 0 or very scanty; embryo rather large, bent or curved.

Herbs with slender capsular fruits :—

Stamens arising from the disk ; petals imbricate in bud ; leaves simple with stamens 6, or digitately compound with stamens 12-many **Cleome***

Stamens arising from the gynophore; petals open in bud; I**⁶⁸ digitately compound with stamens 6.....**Gynandrop**^{8fs},

Shrubs or trees with round or ovoid, berry-like, usually indehiscent fruits; stamens many, rarely definite :—

Climbing shrubs with simple leaves and stipulary thorns ; sepals 4, imbricate, free; disk 0. **Cap**^{ris#}

Trees with digitately trifoliolate leaves . "unarmed;" sepals' 4, open in bud, cohering below with a convex lobed disk **Cra** [#]*

G'In<indropsis.}

CAPPARIDÆ.

SO. Cleome Linn.

Herbs; leaves simple or digitately 5-9-foliolate. * or purple, racemose. Sepals 4, spreading. Petals 4 or more, directly attached to the thalamus. Jk short or 0; ovules many on 2 parietal placentas, * Wg or linear capsule with 2 valves that separate from the bearing placentas. Seeds reniform.

leaves simple ; stamens 6 ; flowers dull purplemonophylla.

leaves compound ; stamens 12 or more :—

Stamens 12-20; flowers yellow; capsules and leaves softly ^ Pubescent. glabrous, leaves

Stamens ma^T'flowers 'rose-coloured ; capsulesChelidonii.

glabrous or sparingly hairy

77 n .. T ... IOQ • V B. I. ! • 168.

"• CLBOME MONOPHYLLA Linn.; F. I. ni. ±x>> r - •" - "arha ; Behar; W. Bengal; Chota Nagpur.

A weed of fields and waste places. Santai. n kedar iawar.

^ . CLEOME VISCOSA Linn.; F. I. ui. 128; F. B. 1.1. 170' E* V, C. 1367.

In fields and waste places, everywhere.

A viscid herb. 5 ^ . Hurhuria; Hind. Kanphuta F B. ^

19 << CLEOME CHELIDONII "Linn. £.; F. I. in- TM' , i Hills,

! • 170. «ehar, marshy places at the foot of the Hajmahal plentiful.

A herb.

31. Gynandropsis DC.

> g i * * << * — * or gabat. he SibTS ^ i-

7" foholate. IToawrr, purple, racined. Sejmis 4, P * * 4- Stolen. 6, the fitoents adnate below to the gy^al V free above. 0 , ^ stalked; style *ört; ov ^ ^ n^wi ^ * ^ parietal placentas. iU << an oblong or lnear "gf* g^ re^ve_s that separate from the seed-bearing placentas.

80. T i 171; E. D.

GVNANDEOPSIS PENTAPHYLLA DC ; F- B. • ! •

C 753. Cieomc pntaphyU" F. I. iii- I^26-

In waste places, everywhere.

a.foliolate

An annual herb with pale purplish (lowers and

[*Gynandropsis*.

bracts. *Santal*. Seta kata arak; *Beng.* Sa ? * nurhuria,
ansarisha, arkahuli; *Hind.* Charota, karaila, nu^{fl}.

52. *Capparis* Linn.

Trees or shrubs, erect, decumbent, or climbing, unai^{nied Of w^jj}
stipulary thorns; leaves simple, rarely 0. Flowers us^{ually >vj,itei}
often showy. Sepals 4, free, 2-seriate, imbricate, oi^{the oute^ Paix-}
valvate. Petals 4, sessile, imbricate. Stamens numero^{us verY}
rarely definite, inserted directly on the thalamus a^{if base Oi g^2 lft}
phore. Ovary stipitate on a long gynophore, 1-4-ce^{lled. stig»}
sessile; ovules many on 2-6 parietal placentas, i^{uit} * fleshy*
indehiscent, rarely valvular dehiscent. Smfa many, u^{nbe^Jed in}
pulp; cotyledons convolute.

Flowers few :—

Flowers supra-axillary, 2-4, the serially superposed pedice^{t and sep^}
length; leaves elliptic-oblong to broad-ovate, young shoo s^{horrida.}
rusty pubescent

Flowers axillary, usually solitary :—

Leaves acute, broad-ovate to lanceolate, glabrous; fruit smooth;
flowers 1-3 on a short shoot^{eylanica.}
Leaves orbicular, floccose with white pubescence; fruit u^{bbed, off^{en}}
dehiscing; flowers always solitary..... *spinoact* var. ^{leucophylla}

Flowers numerous, in umbellate corymbs; leaves glabrous. — ^ ^ fl⁹
Corymbs simple, sessile or short-peduncled; stamens many ^ ^ 0.
large as a pea..... V^v (about 8)
Corymbs arranged in large terminal panicles; stamens ie^{toris Hnl\ a.}
fruit as large as a cherry..... C. 4to.

81. *CAPPARIS HORRIDA* Linn. f.; F. B. I. i. 178; B-^{u>}

C. zeylanica F. I. ii. 567 (not of Linn.).

In thickets and hedges, everywhere.

A climbing shrub. Vernac. Asaria, bagnai.

82. *CAPPARIS ZEYLANICA* Linn.; F. B. I. i. 174; E. D-^{c. ^ j,}

C. acuvinata F. I. ii. 566.

S.-W. Bengal and Orissa, on dry stony ground.

A rigid, wiry, much-branched shrub. *Bcng.* K^{alu} ke ^ . ^

83. *CAPPARIS SPINOSA* Linn. var. *LEUCOPHYLLA* HOO^{k. f. ^}

Thoins.; F. B. I. i. 173.

Tirhut, Bettiah.

A branched shrub, with prostrate or trailing branches.

Vernac. Kabra.

VIOLACEAE

84. *CAPPARIS SEMRULHANA* F. L. U. 568; F. I. i. 177; E. D. o. 427.

Hedges and thickets, general; Sundribuns, sea-face.

A rather extensive wiry climber. Kanta guv k annai.

85. *CAPPARIS FLOMBTODA* Wight; F. B. I. i. 177.

Orissa.

A large woody climber.

S3. *Cratseva* Linn.

Tr. »; bun digitally 3-foliolate. » « « r » large, \downarrow flow or lobed
 part. A polygamous. 4 « l » 4, oahoring below with the
 convex * * * . Ai « fe 4, long-clawed, open in bud. Stamens
 numerous; filaments 3 \wedge b eltW to the base of the gynophore,
 free above. 0, any stipitate on a 1011g gynophore, 1-celled; st \wedge t
 sessile; ovules nian y on 2 parietal p \wedge centas. Fr 1 H \wedge t hard,
 hiscent
 • Seeds imbedded in pulp.

J | J J » ovate-lanceohUe, abruptly acuminate; fruit globose ... religiosa.
 * w \wedge Unced Uto, gradually tapering; ft n l t o j \wedge rel var. *Nurrala*.

86. *OBATA AELIOIOSA* Forst.; F. 35. I. I. " 2; B. D. O. 2039.
 \wedge H > P « ins trifoliata F. I. ii. 571.

Generally planted.

- 86/2. Var. *Krav A* Hook. f. ft Tho.us.: F. B. 1. > " 2; K. D. C 2041.

As frequent as the preceding.

A stunted tree, standing long bare of leaves. Flowe s ta ge,
 from creamy-white to pale rose, with purple stamens.

Bcng. Tiktashak; *Hind.* Barun.

Order XII. VIOLACEAE

Herbs 01. sh 1. 11W heaves 11lte mate, rarely opposite, entire > or
 rarely PUuxatisect; stipules leafy or small, often deciduous.
 l \wedge en regular or irregular, axillary, solitary or in a \wedge g o
 \wedge l o d cymes, rarely £ n « M »; pedicels usually 2-bracteo W J
 ? * * 0 - Sepa U 5, persistent, equal or unequal, imbricate. P \wedge -
 * . \wedge Pogynous or slightly perigynous, irregular, less, " V
 y < usually contorted-imbricate. Stamens 5 perfect, h J P \wedge nous
 Ot \wedge ghtly perigynous; filaments short or 0, com.ect.ve usua X

See s usu rare! ^ few, arillate or with pulpy testa; albumen fleshy, y scanty; embryo straight or incurved, axial.

^ * ^ imbricate : -
..ls, li present > without any basal scale :—
Petals lai «e. broad, contorted; anthers opening by pores; flowers
J ai ge or medium, always hermaphrodite :—
leaves deeply digitately lobed or divided; capsule smooth, 3-5-
valved ; seeds covered with cotton ; flowers large, yellow, appear-
*ng before the leaves.....Cochlospermum.
Leaves entire; capsule softly prickly; seeds covered with dye-
felding Pulp ; flowers medium, white or pink, appearing with the
leaves. Bixa.

Petals 0; anthers opening by slits; flowers very small, usually
dioecious:--
Ovary with 2-8 cells ; branches almost always spiny ; leaves (of
or species) never more than twice as long as broad...Flacourtia.
Ovary 1-celled, with parietal placentas; branches rarely armed ;
leave four specj es) thrice as long as broad.....Xylosma.
Small, with fleshy cuneate basal gland-like scales with ciliate
ed. s; flowers rather small, usually dioecious.....Taraktogenos.
Sepals connate in a valvately toothed or irregularly bursting cup ; petals
rather large with basal ciliate scales ; flowers conspicuous, dioecious;
anthers opening longitudinally ; ovary globose, 1-celled ...Chaulmoogra.

55. Cochlospermum Kunth.

T
lobJ? ea ^^ shrubs^ with yellow or reddish juice ; leaves digitately
s * Or divided. Flowers very large, yellow, hermaphrodite,
man epals 5> deciduous. Petals 5, large, contorted in bud. Stamens
G y, on ^ glandless disk; anther-cells with pores or short slits,
lobe? 8lobose> al most completely 3-5-celled ; style simple, stigma
can - i o Vules many on 3~5 intruded placentas. Fruit a 3-5-valved
cruce With membranous endocarp. Seeds cochleate, testa hard,
y J embryo curved.

* COCHLOSPERMUM GOSSYPIUM DC; F. B. I. i. 190; E. P.
c* 1512. Bombax gossypinrn F. I. Hi- 169.

W. Bengal; Behar; Chota Nagpur; Orissa: elsewhere
planted.

A small tree, bare when flowering; flowers, very con-
spicuous, in hot season. Beng. Gabdi; Santal, Hoppo;
Kind. Kumbi; Kol. Galgal; Uriya, Konto palas. l«c
Yellow Cotton-tree. The gum, Kt.

56. *Bixa* Linn.

Trees, with simple *leaves* digitately nerved and slightly or not lobed. *Flowers* in terminal panicles, white or rose, herinaph*⁰ d*^{te}, *Sepals* 5, imbricate, deciduous. *Petals* 5, contorted in b u d. *Stamens* numerous; anthers opening by terminal pores. Ovary many. 1-celled, placentas 2 parietal; style slender curved; ovules many. *Fruit* a 2-valved loculicidal capsule, the placentas in the centre of the valves. *Seeds* numerous, with thick funicle and dye-yielding pulpy testa; embryo large, with scanty fleshy albumen.

89. *BIXA OKELLANA* Linn. ; F. I. ii. 581; F. B. I. i. 190; *J^k B. 523.

Cultivated everywhere, but in Bengal propi^h very generally wild in village jungles.

A small, evergreen American tree or large bush g*o*ⁱ f*^{...} the dye yielded by the pulpy testa. The cultivated ^ has often rose flowers; the flowers of plants that k^{ave} u. ^ wild are almost always white. Vernac. Latkan (*genera* U^

. **Kong kuombi** (*Santal*); **Powasi** (*Chittagong*); ^{Gxx} **lb.** (*Orissa*). The Anatto.

57. *Flacourtia* Commers.

Trees or shrubs, often spiny; *leaves* simple, toothed or crenate. *Flowers* small, usually dioecious, rarely hermaphrodite. *Sepals* 4-5, small, imbricate. *Petals* 0. *Stamens* numerous; anthers versatile. *Ovary* 2-8-celled, on a glandular disk; styles 2 o ^ stigmas notched or 2-lobed; ovules usually in pairs on e*c. d. *Fruit* indehiscent with a hard endocarp; cells 1-seede. *Seeds* obovoid with leathery testa; cotyledons orbicular.

Leaves oblong or oblong-lanceolate with acuminate apices, twice as l*o*^o as broad; spines compound; fruits about the size of grapes. ..*Cataphr* ^ Leaves ovate, obovate, oblong or elliptic with blunt apices, less tnl^ twice as long as broad; spines simple; fruits about the size of currants ^

Thorns scattered, naked; styles usually united, lobes of stigma o- >> berry when dried 5-7-angled; seeds 8-10 :—

Leaves glabrous above, glabrous or only hairy on the mTM ^ beneath.....*Bamontchi* var. ^p^(l) ^

Leaves often hairy above, always hairy, sometimes velvety bene^{at} *Ramontchi* var. *occidn* ^^{alis}.

Thorns numerous, almost always bearing leaves and flowers; styles usually free, lobes of stigma 3-4; berry when dried 3-4-angled; seeds 5-fi....

- 90 - FLACOURTIA CATAPHRACTA Roxb.; F. I. iii- 834; F. B. I. *¹⁹ 3; E. D. p. 603. .
 N-Bengal; E. Bengal; Tippera; Chittagong.
- 91 - FLACOURTIA RAMONTCHII L'Herit. var. SAPIDA F. B. I. i- 193 ;
 E- D. P. 615. *F. sapida* F. I. iii. 835.
 Behar; Cliota Nagpur, eastern districts; W. Bengal, common; C. Bengal, rather rare; Orissa.
 A rambling shrub. *Beng.* Benchi, katai, tambat; *Santal.* Ser^{er} ali; *Uriya*, Baincho; *Hind.* Bilangoa, kanjii, bench.
- 91/2. Var. OCCIDENTALIS Hook. f. & Thorns.; F. B. I. i. 193.
 Western Behar; Western Chota Nagpur.
 A rambling shrub. *Santal.* Merli; *Kol.* Merlec.
- 92 - FLACOURTIA SEPIARIA Roxb.; F. I. iii. 835 ; F. B. I. i. 194;
 E- D. F. 624.
 C- and E. Bengal, common; also Sundribuns.
 A low, rather compact spiny shrub. *Beng.* Benchi.

58. Xylosma Forst.

Tr ees or shrubs ; leaves simple, usually serrate. Flowers small, dioecious. Sepals 4-5, small, imbricate. Petals 0. Stamens numerous, 5 anthers versatile. Ovary on a glandular disk, 1-celled with 3 parietal placentas; style very short, usually with stigma capitate. Fruit a globose 2-8-seeded berry. Seeds with leathery testa.

*XYLOSMA LONGIFOLIUM Clos.; F. B. I. i. 194; E. D. X. 21.

Chota Nagpur.

A large shrub or small tree, flowers deliciously scented.

Vernac-. Dandal, katari, khandara.

59. Taraktogenos Hassk.

Trees; leaves entire > alternate; stipules minute, fugacious. *70
 Wers *n more or less dense, short, few-flowered, axillary cymes, a v
 Wtll few sometimes hermaphrodite on the functional male trees, e
 u much more mainly staminate only. S Sepals 4 in decussate pairs, u
 t, ne K imbricate, round, concave. Petals 8 in 2 rows, smaller than
 ha u Sepals, imbricate, each with a basal gland; glands less than
 JH f lar as Pals, fleshy, cuneate, often fringed, ridged and
 * 7 d - Stamens 20-32, anthers deeply cordate, i and * W<<
 ilaluy in structure. Sepal*, however, often only 3. Petals often

only 6. *Stamens*, when present, about 16. *Carpels* 4, connate in a 1-celled, elongate-ovoid, often sulcate ovary, divided about 4 oblong, divergent, reflexed lobes, stigmatic on their inner faces; placentas 4, parietal; ovules many on each placenta. *Fruit* large, globose or ovoid, with a hard fibrous or woody rind. *Seeds* many, straight, with large, cordate, foliaceous, 3-nerved cotyledons.

94. TARAKTOGENOS KURZII King; E. D. G. 762.

Tippera; Chittagong.

A tree 40-50 feet high; yields the Chauhoogva and Chaulmoogra oil of commerce. *Vernac.* Chaulmoogra (Chittagong).

60. Chaulmoogra Iloxb.

A tree with large, entire, glabrous leaves. *Flowers* axillary or on the stem and large branches below the dioecious. *Sepals* connate in a cup-shaped, valvately 5-toothed irregularly opening persistent calyx. *Petals* 5, each with a basal ciliate scale., *Stamens* numerous; anthers basifixed, *Ovary* 0. *Staminodes* 10-15, villous. *Ovary* globose 1-celled styles 5; stigmas large, cordate; ovules many, on 5 parietal placentas. *Fruit* large globular, berry-like, with a rough, woody rind. *Seeds* obovoid, imbedded in pulp, with tough, testa; albumen oily; cotyledons large, flat, fleshy, reniform, usually more or less excentric with radicle generally horizontal.

95. CHAULMOOGRA ODORATA Roxb.; F. I. iii. 835. *Gynocarpus odorata* F. B. I. i. 195; E. D. Q. 761.

Chittagong.

A large tree; long supposed to be the source of the known Chaulmoogra seeds, an idea now known to be erroneous. *Vernac.* Chaulmoogra (*Silhet*).

Order XIY. POLYGALACEJE.

Herbs or shrubs, sometimes scandent, or trees. *Leaves* alternate or subopposite, rarely whorled, simple, entire; occasionally reduced and scale-like or 0; stipules 0. *Flowers* irregular, hermaphrodite; pedicel jointed, bracteate and 2-bracteolate. *Sepals* small, annular. *Sepals* 5, 2 inner wing-like, petaloid, large, imbricate. *Petals* 5 or 3, free or connate, unequal, lowest usually keel-like. *Stamens* 8, rarely 5 or 4, hypogynous; filaments con-

Hate in
 anthers ^{6160*} **cleft** ^{shea*h>} less often free, usually adnate to petals;
 less often ^{CU} sub^{ular} or ^{introrse} sub^{tubular}; dehiscence apical by pores,
 Carpel ^u ^a ^{introrse} opening, rarely longitudinal introrse.
 occasionally ^{2>} rarely ^{3~5}, united in a ^{generally} 2-locular or
 ovary ^{Moecular}, less often 3-5-locular superior
 rarely ^{ple}, curved stigma usually capitate; ovules 1,
 2-seeded ^{generally} a 2-celled,
 barely ^{capsule}; sometimes indehiscent 1-seeded,
 striate ^{of} ³ indehiscent carpels. *Seeds* pendulous, usually
 axial ^{at} ^{albumen} fleshy, rarely scanty or 0; embryo straight,

Herb
 seeds ⁵ fruit a compressed, loculicidally 2-celled capsule;
 Sepal ^{! Petals} gamophyllous; stamens monadelphous:—
 Pair ^{the} ^{two} inner hardly larger than the others; petals 3, lateral
 Sepals ^{the} ^{upper} pair absent; stamens 4-5 **Salomonina**.
 Pair ^{the} ^{two} inner much larger than the others; petals 3, lateral
 Plan ^{united} to keel, upper 0, or represented by scales; stamens 8;
 Shrub ^{some} ^{tree} woody at the base..... **Polygala**.
 albumen ^w trees; fruit indehiscent 1-celled; seeds solitary, without
 Sepal ⁵, the ^{two} inner much larger than the others; petals 3, lateral
 pair ^{united} to keel, upper pair represented by scales; stamens
 monadelphous; fruit with a ^{amaroid} wing; climbers **Securidaca**.
 (2hv) ^{5>} ^{subequal}, petals 5, subequal, free; stamens 8, free
 epigynous, 6 epipetalous); fruit not winged; erect trees
Xanthophyllum

61. Salomonina Lour.

Annual herbs, leafy ^{diffuse}, or leafless and parasitic.
 2 ⁱⁿ ^{dense} terminal spikes. *Sepals* subequal, the
 the ^{only} slightly ^{larger} than the others. *Petals* 3, adnate at
 hood ^{to} the staminal tube, the lowest keeled and somewhat
 a ^{sh-} ⁴⁻⁵, the filaments in their lower half connate in
 one ^{with} porous dehiscence. *Ovary* 2-locular, with
 Cap ^{pend}ulous ovule in each cell. *Fruit* a laterally compressed
 alb ^{psule}, ² celled, opening loculicidally, margins toothed. *Seeds*
 minous, with a faint strophiole or naked.

96, SALOMONIA OBLONGIFOLIA DC.; F. B. I. i. 207.
 W.-Bengal; Chota Nagpur; Behar; Tirhut; N. Bengali
 always rather scarce.
 A slender annual with small leaves and strict, angular
 stems.

82. *Polygala* Linn.

shrub alternate \wedge e s. *Sepal** usually
 Umer OousldeTM% larger than the others a j
 sheath, ihe[^] !' \wedge \wedge at thoir bases with the stam>*
 fiW 'L' -T \wedge and <TM% crested. * / — »*'ie
 S h deh il e PorOUS 0 " \wedge 22locHar; ovules in each cel
 solitary, p r T...ous. Fruit a 2_celUed - loculicidal capsule, with one
 seed in each cell. Seeds albu.ninous, almost always stroph ϕ 1 ^

Calyx deciduous; keel petal not crested; bracts caducous; strophole of
 seed with two small appendages; flowers very small, yellow; leaves large,
 membranous (1-2 in. long).....*triphylla* var. *glaucescens*.
 Calyx persistent; keel petal crested; bracts persisting till the flowers
 open; leaves herbaceous:—

Racemes axillary or extra-axillary; bracts minute:—

Racemes dense-flowered, shorter than the leaves:—

Stems woody below; wings obovate, membranous, petaloid, with
 rounded tip twice as long as the petaloid part; capsule with two
 notched *Sis*; appendages; leaf with two small *strophole* with two small
crotonarioides.

Stems herbaceous; wings not longer than capsule:—
 Wings obliquely oblong, membranous, petaloid, hairy; capsule
 ovate, notched, hairy; capsule with two small *strophole* with two small
 without appendages.....*eriptera*.

Wings very oblique, acute, herbaceous, glabrous; capsule
 suborbicular, notched, glabrous except the ciliate margin; seeds
 sparsely hairy, strophole with 3 very short appendages

Racemes lax-flowered, longer than the leaves; wings very oblique,
 herbaceous; capsule with two small *strophole* with two small
 winged, glabrous; capsule with two small *strophole* with two small
 appendages.....*chinensis*.

Stems herbaceous; wings not longer than capsule:—
 Wings obliquely oblong, membranous, petaloid, hairy; capsule
 ovate, notched, hairy; capsule with two small *strophole* with two small
 without appendages.....*eriptera*.

97. *Sis* * " Hara $\langle \rangle$ • $\langle \langle \text{MUO} \rangle \rangle$ M Hook - fi *
 . 201.
 Chot Nagpur, on most of the hills of the
 Awelk

98. *Polygala* Linn. or ascending herb with slender stems-
 keel-like. *Polygala* Linn. Ham.; F. B. I. I $\langle \rangle$ i & P>

Xanthophyllum

- Behar**: Chota Nagpur: rather uncommon.
99. **P**⁰ **SI** «aU, much-branched undershrub. *Santal* Lil kathi.
GALA ERIOPTERA DC.; F. B. I. i. 203.
 ^ehar and Chota Nagpur, frequent.
- 10) **p** ^{an} **arm**ual herb, usually decumbent and diffuse.
 • **GALA** cmsBNSra Linn.; F. B. I. i. 204; E. D. P. 1062.
wvcmu F. I. iii. 218.
Common everywhere in pastures and on roadsides.
 ^ annual herb, usually decumbent and diffuse. *Bcng.*
- ioi.** **v** ^{aad} *Hnd*Meradu
WOALA ELONGATA Klein; F. 33. I.). 203.
 Western Behar.
An ei*ect annual. The Behar plant is the form with linear-
- 102 **P** ^o **MOng**, obfcuse leaves,
ALA LBPTALEA DC.; F. B. I. i- 202.
iota Nagpur; Behar; Tirhut; N. Bengal.
 -**Vn** erect branching perennial, with slender angled stems.

63. Securidaca Linn.

Shrubs ^{llsua} % scandent; *leaves* alternate, simple, entire.
Flowers ^{1U} terminal or axillary simple or panicled racemes.
Sepals ^o deciduous, ^{lls} ^{twi} > inner larger wing-like and petaloid.
Petal ^o ³ > lafcci, al pair not united to keel, the upper represented by
^{scal} **V** ^{he} ¹⁰ West keeled, ^eate and crested. *Stamens* 8, filaments
^{com} **1-W** ^{pe}: anthers 2-oeUod, dehisence obliquely porous. *Ovary*
broL ^u: ^o **vule** **H** ^{at}ary. *Fruit* a 1-celled, 1-seeded samara, with
st **J** ^{**}: ^o **riaceou**» wing" *Seeds* without albumen and without a
^{wio} **I** ^{hiol}.

- 1**^{o3} **SRCDIUDACA** TAVOYANA Wall.; F. B. I. i. 208.
 Tippera; Chittagong.
 A large woody scandent shrub.

64. Xanthophyllum Roxb.

Trees, with large, alternate, coriaceous, pale-green leaves.
Flowers [^] **Panicles** ⁻ **S** [^] **h** 5, nearly equal. *Petals* 4 or 5, nearly
equal, the loweat keeled but not crested. *Stamens* 8, 2 hyp^o
^g [^] **US**, ^{fil} «nentB free, 6 adnate to the base of the petals. *Ovary*
[>] ^{**} **Uocular**; style curved; ovules several. [^] **u,t** **M**
¹ ^{**} **ee** < **H** indehiscent. *Scale* without albumen and without a
^{Stro} **I** ^{hiol}.

104. XANTHOPHYLLUM FLAVESCENS Roxb. F. I. ii. 222; F. fr. i. 209; E. D. X. 8.
 Chittagong.
 A timber tree; wood very hard and durable. B<*9-Ajensak, gandi.

Order XY. CARYOPHYLLACEJE.

Herbs, rarely shrubby at the base, stems and opposite branches with usually thickened nodes. Leaves opposite, entire or wrrnWe. often connate; stipules small scarious, ov 0. Mower* hermH*¹* dite, rarely 1-sexual, golitary terminal, or in cymes. DUK *»? annular or elongated, or represented by glands. Sepals i * ⇨ connate or free, imbricate. Petals 4-5, rarely 0, hypogyw"* rarely perigynous on the disk. Stamens 8 α' 10, rarely fewer, inserted with petals; filaments filiform; anthers"2-celled; deh.s- cence longitudinal lateral. Carpels 2-5, united as a 1-loeul? rare ly imperfectly 2-5-locular ovary; styles 2-5 free, or style single 2-5-lobed above, styles or style-lobes stigmatic on inner t<#/'< ovules 2-many, on slender basal funicles that may be free or united as an axial i column, wnphitropous. Fruit a membranous or crustaeons capsule opening by valves or teeth as many or t*** as many as styles, rarely fleshy and indehiscent or bursting irregularly. Seed, few or many, rarely solitary reniform, rfobo*.- obovoid or flattened; albumen mealy rarely fleshy; embryo usually excentric curved, sometimes nearly straight in flattened seeds.

Stipules 0; petals 5; the ... d with Λ
 on a Bynophove; •V>* Portly 4-valved; styles 2 ft*;
 stipules 0..... S a Bn a*
 Calyx of 4-5 free sepals i PetalsTMb --l--na-in;e;ie;i;ith 'he stamens
 on an annular disk:—

- Styles 3-5, free:—
 Stipules 0; petals 2-Sd if present... Stella"*.
 Stipules scarious; petals entire..... Spergula.
 Styles 8 .combmea; stipules various •.....
 S i ceous; petals 4-6-fid; style 3-fid; leaves ovate-cordate,
 ; petioled Drymaria.
 Sepals scarious; leaves narrow, opposite and in axillary fascicles,
 sessile:—
 Sepals keeled; petals entire; style 3-fid..... Polycarpon.
 Sepals not keeled; petals entire, 2-dentate or erose; styles united
 throughout; stigma 3-toothed Polycarpaea.

65. Saponaria Linn.

Herbaceous annual or perennial; leaves flat. Flowers in dichotomous cymes. Calyx more or less tubular, ovoid or oblong, 5-toothed; nerves obscure. Petals 5, clawed, limb entire or notched, or without a basal scale. Stamens 10. Disk small or elongated into a gynophore. Ovary 1-celled or imperfectly 2-3-celled; styles 2, rarely 3; ovules numerous. Fruit an ovoid or oblong capsule, rarely subglobose, 4-toothed in dehiscent. Seeds reniform or subglobose; embryo annular.

105. SAPONARIA VACCARIA Linn.; F. B. I. i. 217; E. D. S. 850.

^s - *Verfoliata* F. I. ii. 445.

In fields of grain in Tirhut and Behar, common; C. Bengal, occasional only.

A cold weather weed* *Benrj.* Sabuni; *Hind.* Musna.

66. Stellaria Linn.

Herbaceous annual or perennial, erect or prostrate; leaves usually flat; stipules 0. Flowers in dichotomous cymes, or occasionally basinal solitary > white. Sepals 5, rarely 4, free or connate at the base. Petals 5, rarely 4, 2-fid or 2-partite, occasionally 0. Stamens 10, rarely fewer, perigynous or perigynous. Disk annular or divided into 5 glands. Ovary 1-locular, rarely 3-locular; styles 3 or rarely 5; ovules usually numerous. Fruit a short capsule, splitting below the middle to the base into as many entire or 2-fid valves as there are styles. Seeds compressed, tubercled, granulate or nearly smooth; embryo annular.

106. STELLARIA MEDIA Linn.; F. B. I. i. 230; E. D. S. 2789.

^c - Bengal, occasional in waste ground or gardens, but only near Calcutta, in the cold weather.

A variable weed.

67. Spargula Linn.

Herbaceous annual or perennial, with dichotomous or fascicled leaves; leaves opposite, with frequently axillary leafy buds. Leaves become pseudo-verticillate; stipules small, scanous. Flowers in peduncled paniculate cymes. Sepals 5. Petals 5, rarely fewer, rising from the perigynous disk. Ovary 1-locular; styles 3 or 5; ovules numerous. Fruit a capsule, with 3 or 5 entire valves. Seeds compressed, winged or granulate.

Green, leaves linear, semi-terete grooved beneath ; petals obtuse, keeled or narrowly winged, papillose.....
 Glaucous, leaves linear-subulate, terete not grooved beneath ; acute; seeds smooth compressed, broadly winged.....

107. *Spergula arvensis* Linn. ; F. B. I. i. 243:

Behar; Chota Nagpur ; W. Bengal.

A cold weather weed.

108. *SPERGULA PENTANDRA* Linn.; F. B. I. i. 243.

flaccida F. I. ii. 447.

Behar; Chota Nagpur; W. Bengal; also near Calcutta, but rare.

A cold weather weed.

68. *Drymaria* Willd.

Herbs, diffuse or suberect, much dichotomously branched; flat; stipules small, often fugacious. Flowers solitary or terminal or axillary. *Sepals* 5, herbaceous. *Petals* 5; *Stamens* 5, rarely fewer, slightly perigynous. *Ovary* 1-locular; style 3-fid; ovules few or numerous. *Fruit* a 3-valved capsule. *Seeds* globose, reniform, or compressed; embryo curved.

109. *DRYMARIA CORDATA* Willd.; F. B. I. i. 244.

cordifolium F. I. ii. 458.

Chota Nagpur, on Parasnath ; N. Bengal.

A diffuse weed.

69. *Polycarpon* Linn.

Herbs, glabrous or pubescent, diffusely dichotomously branched; leaves flat, opposite, with axillary leafy buds whence leaves pseudo-verticillate ; stipules scarious. Flowers small, many-flowered cymes with scarious bracts. *Sepals* 5, keeled. *Petals* 5, small, hyaline, entire or toothed. *Stamens* 3-5. *Ovary* 1-locular ; style short 3-fid; ovules numerous. *Fruit* a 3-valved capsule. *Seeds* ovoid ; embryo incurved or nearly straight-

110. *POLYCARPON LCEFLINGIJE* Benth. & Hook. f.;

i. 245. *Zicejiingia indlica* F. I. i. 165.

In fields and waste places, everywhere.

An erect or diffuse weed. *Hind.* Sureta; *Beng.*

70. *Polycarpasa* Lamk.

Herbs, annual or perennial, usually erect; leaves flat, with axillary leafy buds whence leaves become pseudo-verticillate

stipules acarious. Flowers small, numerous, in open or congested or subcapitate cymes. Sepals 5, scarious throughout and often aured, or scarious at the edges and elsewhere herbaceous. r e ^ 5, with entire, 2-toothed or erose margins. Stamens 5, SU^erigynous, free or connate in a tube and further adnate to P^etaf. Ovary Mocular ; style slender 3-fid or 3-toothed ; ovules nume^rous. Fruit a 3-valved capsule. Seeds obovoid or cam- pressed ; embryo curved, rarely straight.

111. POLYCARPÆA CORYMOSA Lamk.; F. B. I. i.; E. £. p. iōbūñ

Celosi a corymbosa F. I. i. 681.

In fields and waste places throughout Behar and Chota Nagpur; on sandy river-banks in N. and E. Bengal.

An erect or decumbent herb. Santal. Janhe nanjom.

Order XYI. PORTULACACEfil.

Herb^s > rarely undershrubs. Leaves opposite or alternate, entire ; stipul^es scarious or bristly, occasionally 0. Flowers regular, hermaph^rodite. Disk 0, but ovary sometimes (Portulaca) partially Jf in the torus. Sepah fewer than petals, usually 2, imbricate. h^e J^al* 4-5, rarely more, hypogynous or perigynous, free or united ^e K fugacious. Stamens imLy, inserted withpeWs and some- t^i^e << adnate to their base; filaments filiform; anthers 2-celled, ceUs Parallel; dehiscence longitudinal, lateral. Carpels united as a ^re^ or half inferior 1-locular ovary; style simple below, 3- or more-, ^ y^ 2-fid above > the branches ,stigmatic within; ovules 2-many. Render basal funicles that may be free or united in an axial *Ohll an, amphitropous. Frvib a membranous capsule opening t^ Aversely or by as many valves as there are style-arms, or occasi^onalUy, indehiscent, Seeds 1, many, ooinPRESSED * albumen mealy \ embryo excentric, curved.

> * * terminal, solitary or clustered, surrounded by a whoil of {**Ve3; calyx-segmente united below in a persistent tube adnate to 5* half of ovary, the upper free teeth deciduous.....Portulaca. *low*a lad, paniculate; sepal* free, entirely deciduous; ^ ^ ^

71. Portulaca Linn.

^ s , annual or perennial, diffuse, usually succulent; ^ with scarious or bristly nodal stipular appendages; occasionally

[*Portulaca*.

stipules 0. *Flowers* terminal, solitary or clustered, surrounded by a whorl of leaves. *Sepals* 2, connate below, the upper deciduous. *Petals* 4-6, perigynous or epigynous. *Stamens* numerous. *Ovary* half-superior; style 3-8-fid; ovules many, reniform. *Fruit* a crustaceous, circumscissile capsule. *Seeds* many, reniform.

Leaves fiat; seeds brown ; stamens 8-12 ; root slender :—
 Leaves -4-1-2 in. long, cuneate-oblong; nodes not pilose, clusters of 3-5, small, yellow ; petals 5 ; style 3-8-fid
 Leaves -2-3 in. long, ovate-oblong to ovate-lanceolate ; no flowers solitary, small, yellow, surrounded by a whorl of petals 4; style 3-4-fid
 Leaves terete, linear, -5-6 in. long; seeds black; stamens root tuberous; flowers in terminal clusters, yellow, surrounded by a whorl of 8 leaves and by tufted hairs

112. PORTULACA OLERACEA Linn.; F. I. ii. 463 »
 i. 246 ; E. D. P. 1179.

Everywhere common in waste ground.
 An annual prostrate succulent herb. *Vein*
laniya *

113. PORTULACA QUADRIFIDA Linn.; F. B. I. P. 1187. P. meridiana F. I. ii. 463.

Everywhere, very common by roadsides and places.
 A small diffuse prostrate annual. *Vernac.* Ohotra
lanjya

114. PORTULACA TUBEROSA Koxb.; F. I. ii. 464; F. B. *.
 E. D. P. 1191.

Behar, Monghyr.
 A perennial with somewhat fusiform tuberous *stock*.
Vernac. Laniva.

72. *Talinum* Adans.

Herbs or undershrubs, with succulent stems and flat leaves; stipules 0. *Flowers* racemose or paniced. *Sepals* 2, herbaceous, ovate, deciduous or subsistent. *Petals* 5, hypogynous. *Stamens* 5 or more. *Ovary* superior; style 3-fid ; ovules many. *Fruit* a globose or ovoid 2-3-valved capsule. *Seeds* subglobose or compressed, numerous, strophiolate.

115. TALINUM PATENS Willd. *T. cuneifolium* F. I. ii. 465.

C. Bengal; becoming somewhat common in the neighbourhood of Calcutta.

An American introduced weed. This, which is the *T. cuneifolium* of the F. L., is not the *T. cuneifolium* of the F. B. I. The latter is a species indigenous in India; it does not, however, occur in Bengal.

Order XYII. TAMARISCINEJG.

^{Sh} ^{Or small} trees. *Leaves* alternate, minute, often scale-like ^{ambricate} sometimes sheathing, occasionally fleshy; stipules ^{0.} ^{Wersre} regular, hermaphrodite, rarely 1-sexual, solitary or in ^{6.} ^{or Paniced} axillary spikes. *Disk* of 10 hypogynous or ^{rarely} ^{egynous} glands. *Sepals* 5, rarely 4, imbricate. *Petals* 5, ⁱⁿ ^{serty} ^A free or connate below. *Stamens* 4-5, or 8-10, rarely more, ^{2-cell} ^e on the disk; filaments free or connate below; anthers ^{lat} ^{eral.} ^{Ca} ^{J?} ^{els} 3-5, united as a free 1-locular or imperfectly 3-5-^{lOcu} ^{ar} ^o vary with 3-5 ^{se} ^{Ptt} form placentas free or somewhat ^{con} ^{nate} [?] ^{*} ^{the} ^{centr} e, or somewhat united with ovarian wall at ^{the} ^{ir} ^p ^{eripheral} ^{ma} ^{rgin}, sometimes extending to top of ovarian ^{sess} ^{ile} ^{as} ^{any} as the placentas; ovules 2-many on each ^{placenta,} ^{anatropous} with raphe ventral. *Fruit* a 3-5-valved ^{capsule.} *Seeds* erect, usually more or less comose, or winged; ^{albumen} mealy or fleshy or 0; embryo straight.

73. *Tamarix* Linn.

^S ⁿ ^U ^{trees} or bushes; *leaves* scale-like, sheathing and stem-^{cl} ^a ^{sp} ^{ing} [#] *flowers* white or pink, in lateral or terminal spikes ^{de} ^{nse} racemes, occasionally dioecious. *Sepals* free, 4-5, rarely ^{6.} ^{Peta} ^l [>] ⁸ 4-5, rarely 6, inserted below the angled or lobed or ^{cy} ^{eu} ^{ate} ^d ^{isk}. *Stamens* 4-5 or 8-10, rising from the disk; filaments ^{fr} ^{6e} ^{or} connate at their bases; anthers apiculate. *Ovary* narrowed ^u ^p ^{wards}; styles 3-4, short, dilated into the stigmas; ovules many ^{on} ^a ^{basal} placenta. *Seeds* with a sessile coma; albumen 0; ^{embryo} ovoid.

Stamens 5; disk 5-lobed:—

Leaves not sheathing; racemes long, slender..... ^{Va} ^U ^{ca}.

Leaves sheathing; racemes shorter, dense; flowers dioecious ... *dioica*.

Stamens 10; glands of disk separating the filaments; leaves ^s [^] [^]

116. TAMARIX GALLICA Linn.; F. B. I. i. 248; E. D.* ^{rp 70.}_{T<}
T. indica P. I. ii. 100.
 On river-banks in Tirhut, Behar and Bengal. [^]
 A shrub or small tree; gregarious. *Vernav.* Jhau, ban-
 jhau, jaura.
117. TAMARIX DIOICA Boxb.; F. I. ii. 101; F. #• ^m L. 1. 249;
 E. D. T. 61.
 On river-banks in Bengal, also in the Sundribuns.
 A shrub or small tree; gregarious. *Vernac.* Lal-jhau-
118. TAMARIX ERICOIDES Rottl.; F. B. I. i. 249; E. D-^T _{6B%}
 Chota Hagpur, in river beds and on their banks.
 A bush; gregarious.

Order XYIII. ELATINEJE.

Herbs, often minute, or undershrubs. *Leaves* ^{oPP} ^{oslie} ^{or} _{oUS<}
 whorled, entire or serrate; stipules 2, scarious or herbaceo[^];
Flowers regular, hermaphrodite, axillary, solitary or in ^{fftSC} [^] ₅,
 late cymes. *Dish* 0. *Sepals* 2-5, free, imbricate. *Pc* ^{tals} ^{*} ["] ^g,
 hypogynous. *Stamens* hypogynous, free, 2-5, or 4-10; ^{and} [^]
 2-celled, versatile; dehiscence longitudinal lateral. *Ctorp* [^] ¹ [^] ¹;
 in a 2-5-locular superior ovary; styles as many as loculi, ^{-*} [^] [^]
 stigmas capitate; ovules many in each chamber, on the ^{vf}
 angle, anatropous, raphe usually lateral. *Fruit* a septic¹ ^{aa}
 capsule, the central placental axis and often the septa ^{persist} [!]
 when the valves fall away. *Seeds* straight or curved with a ^{r&P}
 on the hollow side; albumen very scanty or 0; embryo conform ^{to}
 the seed.

74. *Bergia* Linn.

Annual herbs, or erect, decumbent or diffusely branched under-
 shrubs, often pubescent; *leaves* opposite, serrate or entire.
Flowers solitary or in axillary fascicles, minute. *Sepals* ^{usual} [^]
 5, with herbaceous midrib and membranous margins. ^{?eia}
 usually 5. *Stamens* 3-5, or 10. *Ovary* ovoid, 3-5-celled; ovules
 many. *Capsule* subcrustaceous, septicidal. *Seeds* many, minute-
 Glabrous; stems procumbent rooting; sepals 5, petals 5, stamens 10;
 ilowers sessile, white. ^{vertit} ⁱ [^] ^{ta}
 PuberulouB; stems erect with lower ^{bmnche's} decumbent; ["] ^{sepals,} ^{setfla,}
 and stamens each 3-^f, varying synchronously; ilowers pedicelled, ^{rose}
^{ammamioides.}

- U9. BERGIA VERTICILLATA Willd.; F. I. ii. 456 : F. B. I. i. 252.
Rice-fields and river-banks ; occasional.
A small annual weed. Vernac. Lal-keshuriya.
- !20. BERGIA ÁMMANNIÓIDES Roxb.; F. I. ii. 457; F. B. I. i. 201.
Rice-fields and river-banks; common.
A small annual weed.

Order XIX. HYPERICINE^.

Herbs, shrubs or, rarely, trees. Leaves opposite, rarely whorled, frequently gland-dotted; stipules 0. Flowers regular, hermaphrodite, terminal cymose or solitary, rarely axillary. Disk 0, or represented by hypogynous glands between the staminal bundles. ****• 5, rarely 4, free, imbricate. Petals 5, rarely 4, hypogynous, o** contorted-imbricate. Stamens many, rarely few, but never isomeric with petals; filaments usually connate in 3 or 4 bundles, rarely free or connate; anthers versatile, rarely innate, 2-celled; dehiscence longitudinal lateral. Carpels 3-5, **** in a superior 1-locular, or more or less perfectly 3-5-locular vary, rarely carpel solitary; styles as many as carpels, free or 1-2-lobed. Stigmas terminal, capitate or truncate; ovules many to each carpel and 2-seriate, rarely few or solitary, on the axial or parietal Placentas, anatropous with raphe lateral or dorsal. Fruit dehiscent capsular, or berry-like and indehiscent, rarely breaking up into cocci. Seeds usually straight; albumen 0; embryo straight or curved.

Capitate bursting septically; seeds not winged ; a herb.....Hypericum.
Capsulate bursting loculicidally ; seeds winged ; a shrub.....Cratoxylon.

75. Hypericum Linn.

Herbs, shrubs, or small trees; leaves sessile, gland-dotted. Flowers yellow in terminal or axillary cymes. Sepals 5, 2-lobed. Petals 5, usually oblique. Stamens numerous, free or connate below in 3-8 bundles without intermingling & distinctly connate in 8 bundles with hypogynous, glabrous, or all connate at the base. Ovary 3-5-lobed, free or connate; ovules usually numerous. Fruit a septical capsule or dehiscent along the placentas. Seeds not winged.

121. HYPERIOUM JAPONICUM Thunb.; F. 13. I. i. 256.

Chota Nagpur, common; Tirhut; N, Bengal; E. Bengal,
rare; Chittagong.

A small tufted or prostrate annual.

76. Cratoxylon Bl.

Trees or shrubs; *leaves* entire, usually chartaceous. *Floors*
in axillary or terminal cymes. *Sepals* 5, imbricate. *P^{als}* •/
appendaged or not at the base. *Stamens* numerous, in 3, rarely 0,
bundles, with fleshy intervening hypogynous glands. • *Ovary*
3Jocular; styles distinct; ovules 4 or more in each loculus.
Fruit a 3-valved, loculicidal capsule, valves bearing the septa oⁿ
their centres. *Seeds* winged at the apex.

122. CRATOXYLON NERIFOLIUM Kurz; F. B. I. i. 257; E-¹/_{v%}
C. 2055.

Chittagong.

A shrub, 10 feet high.

Order XX. GUTTIFERffi.

Shrubs or trees, with yellow or greenish resinous juic*
Leaves opposite decussate, rarely whorled, simple, entire, usually
coriaceous; stipules 0. *Flowenvegulw*, dioecious or polygamous,
rarely hermaphrodite; axillary or terminal, solitary, fascicled, o^r
in simple or paniced few-flowered cymes, very rarely su^b-
racemose. *Disk* 0, or fleshy annular. % *Sepals* 2-6, imbricate, oiⁿ
in decussate pairs. *Petals* 2-6, rarely more-or 0, usually muclⁱ
imbricate or contorted, e *Stamens* usually many, rarely definite
and as many or twice as many as petals; filaments free or al^l
connate, or connate in bundles as many as petals; anthers adnate
or terminal or agglomerate; dehiscence longitudinal, usually
extrorse. § or ? *Staminodes*, or stamens surrounding ovary,
fewer and less united than stamens in * . *Carpels* rarely solitary,
usually several, united in a 2-many-, rarely 1-locular ovary, sessile
on torus or seated on the disk; style slender, short, or 0, rarely 2 5
stigmas as many as loculi, free or connate, sometimes peltate;
ovules in each loculus 1-2 or many, axial or erect basal. &**
indehiscent, baccate or drupaceous, rarely a capsule with septi-
cidally dehiscent valves. *Seeds* large, often with arillus or arillodeⁱ
albumen 0; embryo conform to seed, with either a large radicle
and obsolete cotyledons or thick cotyledons and minute radicle.

Mesua.]

GUTTIFERÆ.

?lyx closed before flowering, at length opening into 2 or (rarely) each cell; style valvate segments; petals 4; ovary 2-celled, ovules 2 in each cell; stigma 3-lobed; embryo a large radicle with subobsolete cotyledons. Ochrocarpus

lyx of 4-5 free sepals:— Ovary (2-celled) with ovules (erect) 2 in each cell, style long, stigma peltate; embryo a small radicle with two large cotyledons; petals 4; absorption of septum 1-celled, at length 4-valved; petals 4-5.

Ovary with ovules solitary in each cell:— Ovary 1-celled; ovule erect; style long, stigma peltate; embryo a small radicle with two large cotyledons; petals 4 or 5; stigma Ovary 2-12-celled; ovule attached to inner angle of lobe; sessile or subsessile, entire or lobed, peltate; embryo with small cotyledons; petals 4-5.

77. Ochrocarpus Thouars.

Leaves with coriaceous usually 3-nately whorled, axillary, polygamous or hermaphrodite. Sepals 2, rarely 3, rather calyx, opening in flower into 2, rarely 3, rather 2-lobed. Petals 4-7 or more. Sepals free or shortly connate below; with dehiscence longitudinal. Stigma 3-lobed; ovules in each cell 1 or 2; fruit 1-4-seeded, berry-like. Seeds large; embryo subobsolete cotyledons.

123. OOHROCARPUS LONGIFOLIUS Beilth. & E. D. O. 6.

Orissa, Khurda; Chittagong. A medium-sized tree. Vriya Chlunana, ikesar; Beng. Nagesar.

78. Mesua Wnn.

Stems; imbricate, very coriaceous, opposite, slender, at right angles, solitary, axillary, polygamous or hermaphrodite. Heavily showy, solitary, axillary, polygamous or hermaphrodite. Petals 4-5, imbricate. Others erect, filiform, free or connate at the base. Ovary 2-celled; dehiscence longitudinal. Ovary 2-celled; ovules 2 in each cell; stigma peltate; ovules 2 in each cell; Pericarp firmly leathery, 1-angled, opening by 4 valves. Beilth. 1-4;

124. MESUA FEBREA Linn.; F. I. ii. 605; F. B. I. i. 277; ^{B<} ^{D.}
M. 490.

N. Bengal, Dinajpur; Chittagong: Chota #^a£P^u^{r.}
planted only.

A medium-sized, erect, handsome tree, with very h[»]^r^ā
wood. *Vernac.* Nagesar, Nagkesar, Nahor.

79. Calophyllum Linn.

Trees; *leaves* opposite, shining, coriaceous, with many ^f_l[^]
parallel veins at right angles to midrib. *Flowers* polyga[»]^{IOUSt}
axillary and terminal panicles. *Perianth* of 4-12, [^]^{***J}
imbricate sepals and petals. *Stamens* numerous; filaments ^f_l^U^{to}
often flexuous, free or connate below; anthers 2-celled, ^{ec}
dehiscence longitudinal. *Ovary* 1-locular; style slender, ^w
peltate; ovule solitary, erect. *Fruit* subdrupaceous, ^wth
crustaceous putamen. *Seed* erect, ovoid or globose, with very
testa.

Leaves oblong or obovate-oblong, obtuse or emarginate, shining ^m[^]^g[^]
even; racemes shorter than leaves, in upper axils; flowers ⁻⁷⁻
indiam. %^{no}^p[^]^V^{im}^{ll.}

Leaves lanceolate-acuminate, margins waved; racemes as ^{XoXi}^f
leaves, terminal; flowers -35 in. in diam. ^{vol}[|][«][«]^{Vi}^{im}^{ll.}

125. CALOPHYLLUM INOPHYLLUM Linn.; F. I. ii. 606; F- ^{B*} ^{I.}
i. 278; E. D. c. 146.

Orissa, coast; elsewhere often planted.

A handsome medium-sized tree with fragrant wⁿ^{ite}
flowers. *Vernac.* Kath champa, sultana champa; [^]^{ya}

Punnang; Beng. Punnag. The Alexandrian Laurel.

126. CALOPHYLLUM POLYANTHUM Wall.; F. B. I. i. 274; ^{E<} ^{D.}
C. 152.

Chittagong.

A tall tree. *Beng.* Kandeb.

80. Garcinia Linn.

Trees, with usually yellow juice; *leaves* very coriaceous, ever-
green, opposite; stipules very rare. *Flowers* polygamous, so^U^W^j
fascicled or paniculate, axillary or terminal. *Sepal** 4-5, [^]ⁱ^a^U^y
decussate. *Petals* 4-5, imbricate, *j* *Stamens* numerous, free or
connate in a ring or a globose or conical 4-5-lobed column, ^{usu}[^]

Qnr<inia 1
*J

TEJINSTJRFEMIACEJE.

surround
filament ^ * ni(iiment ary ovary ; anthers sessile or on thick short
or Pores' -', rarely 4-celled > adnate or peltate, dehiscing by slits
morG, fr or transversely. * and \$ *Staminodes* or stamens 8 or
sessile ^i or Connate - Ovary 2-12-celled; stigma sessile or sub-
each 'ce ^ta te, etltile or lobed, smooth or tubercled; ovules in
leatherv - Solitary on the mner angle. Fruit berry-like, rind
Se - - Seed* Provided with a pulpy arillus.

pal, a
Inai Jgied and PetalB 4 6 ach; stftmens of J in "• central shortly stalked
nu Wnt ol Columnai< mass ; anthers quadrate dehiscing vertically;

Male flo y o Vary o :
^groo ^T 8 ^ 3 ~man y - fid terminal and axillary fascicles ; fruit
la noeoloT ee ftnd "celled > aP ex depressed mamillary; leaves broad,
M > leflo r ao Ute at both ends COWa,
obo Vfte oWe k S In a terminal 3-chotomous panicle ; fruit smooth; leaves

^e pals un obtuse, lng-petioled pedunculata.
erect > <ls - e, PetalS Usuffil y 5" each ; stamens in * connate in .5, rarely 4,
male flow lo pe(licel)ecI, spatulftte phalanges, anther-bearing at top;
oblo ^-lnn erS fascicleI shortly pedicelled ; leaves large, linear-oblong, or
ln ceolate, acute Xanthochymu*.

- 127 r
• ^ARCINIA COWA Roxb.; F. I. ii. 622 ; F. T>. I. i. 262 ; E. D.

Behar, Monghyr ; Tippera ; Chittagong.

- 128 n A tall GreCt tree> Vernac, Cowa_
• ^ARCIKIA PEDUNCULATA Roxb.; F. I. ii. 625; F. B. I. 264; E. D. G. 82.

- 129 r A V ^ f ? gal > Ran gp ur -
taU tree> Vernac - Tik "f -
" ^ARCINIA XANTHOCHYMUS Hook, f.; F. B. I. i. 269; E. D.
' 99 * *Xanthochymus pictorius* F. I. ii. 633.

Chittagong; elsewhere planted.
A Sl*iall or medium tree. Bcng. Dampei.

Order XXI. TERNSTRCEMIACEffi.

enti re or sn t ^bs, rarely climbing. Leaves alternate, simple,
kaves or Serrate, generally coriaceous; stipules 0: very rarely
Flowers Opposite, or digitately compound or minutely stipulate.
herma Usu ally showy, generally with 2 sepaloid bracts, regular,
or sliat phr odite, r aroly "l-sexual. "Disk 0. Sepals 5. rarely 4-7, free
a l... connate, intricate, the innermost often larger. Petals

[Kuril".

5, rarely 4-9, free or connate below, imbricate or
Stamens many, rarely definite ; filaments free or connate,
 adnate at their bases to and falling with the deciduous
 anthers versatile or basifixed, 2-locular; dehiscence
 apical, by slits rarely by pores. *Carpels* united in a
 2-, very rarely many-celled superior, rarely half-injunct
 sessile, wide-based ; styles as many as loculi, free or unite
 usually small; ovules 2-many in each cell, rarely solitary
 tropous or campylotropous. *Fruit* indehiscent, soft,
 woody, or dehiscent capsular. *Seeds* few or many on
 placentas ; albumen scanty or 0, rarely fleshy; embr
 horseshoe-shaped or spiral.

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 corolla ;
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 leathery of
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 straight,

Flowers small, dioecious ; fruits small, indehiscent; stamens
 fewer); peduncles 1-flowered ; anthers basifixed.
 Flower conspicuous, hermaphrodite ; fruits medium, dehiscent
 many ; anthers versatile:—

few (15 or
 Jurya.
 nt ; stamens

- Peduncles few- or 1-flowered ; albumen scanty or 0 ; seeds
- Seeds flat, kidney-shaped, winged on the back
- Seeds irregularly globose, wingless
- Peduncles many-flowered ; albumen copious ; seeds

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 .. hima.
 .. Camellia.
 us
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81. Eurya Thunb.

Shrubs; *leaves* usually crenate-serrate. *Flowers*
 sessile or shortly pedicel led in axillary fascicles,
 solitary ; bracteoles persistent. *Sepals* 5. *Petals* 5, connate
Stamens 15-10, rarely 5; anthers glabrous. *Ovary*
 2-5-celled; styles 3, rarely 2-5, free or connate ; ovules
 on inner angle of each cell. *Fruit* small, berry-like,
 fleshy albumen.

diceci
 less often
 ate below.
 3., rarely
 numerous,
 Seeds with

- 130. EURYA ACUMINATA DC.; F. B. I. i. 285; E. T>. C
- Chittagong.
- A shrub.

563.

82. Schima Reinw.

Trees; *leaves* evergreen, thin. *Flowers* axillary,
 uppermost in 3-5-flowered racemes, showy, 2-bracteolate,
 phrodite. *Sepals* 5, free. *Petals* 5, connate at the
 outermost concave subcucullate. *Stamens* numerous, adnate
 base of petals. *Ovary* 4-6-locular, usually 5-locular ; styles
 or faintly lobed above, stigmas broad spreading; ovules

solitary or the
 herma-
 e the
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locxih s i 6, subpendulous from the inner angle. *Fruit* * woody, *depr* e8Sea, g^{lobose} capsule, loculicidal with persistent axis; *Cr* C^{en} ^ much retarded. *Seeds* flat, reniform, winged on the

•*;<<; albumen scanty; cotyledons leafy, accumbent.

i<Sl- SCHIMA WALLICHII Choisy; F. B. I. i. 289; E. D. S. 940.

Gord n a *integrifolia* F. I. ii. 572.

Chittagong.

A lofty tree. *Vernac.* Makrisal.

83. Camellia Linn.

Trees or shrubs; *leaves* coriaceous or membranous, evergreen, *ser* rat*. *Flowers* usually showy, axillary, solitary or sub-famⁱⁿulate, sessile or shortly peduncled. *Sepals* 5-6, unequal, *withi* n a series of subsimilar bracts, and graduating from these to the *P* etals. *Petals* 5 or more, slightly connate below. *Stamens* *non* *j Q^{lx} s > outermost many-seriate, more or less connate and mon-*aa* el Pnous, as well as adnate to base of petals, innermost 5-12 1-2-*se* riate, fl^{ee}. *Ovary* 3-5-locular; styles as many as loculi, free or *m* o* or less connate; ovules 4-5 in each cell, pendulous from *in* *er ^gle. *Fruit* a short, woody capsule, opening locuhcidally.

S. ds ^ ^ Solitary in each Cell, withoUt a Wing; albumCn 0;
<Jb ^ o straight with thick cotyledons.

liSa- CAMELLIA THEA Link. *C. theifera* F. B. I. * ***' >
•E t). C. 244.

" Cultivated in Chota Nagpur, sparingly, and in Chittagong; also in N. Bengal, Duars.

A shrub, as grown for leaf; or small tree, in the seed-lmeb.

Vernac. Child.

84. Saurauja Willd.

Trees or shrubs; young branches brown with white lenticels, *strigose* or scaly, as are the large, usually serrate *leaves* with *stron* g Parallel veins diverging from the midrib, generally aggre-*gated* near ends of branches. *Flowers* usually hermaphrodite, *in ma* ty-, rarely few-flowered cymes or panicles, axillary or from *abo* e scars of fallen leaves; bracts usually small and remote from *calyx*. *Sepals* 5, much imbricate. *Petals* 5, usually conna**e* below. *Stamens* numerous; anthers with porous dehiscenq; *n* 3-5-iocular; styles as many as loculi, free or conna e *Zy* usually indehiscent, berry-like, rarely dry and subdehiscent. *Seeds* many, small; albumen copious.

Saurauja.

133. SAURAUJA ROXBURGHII Wall.; F. B. I. i. 287. *Tefi**
serrata F. I. ii. 521.

Chittagong.

A shrub or small tree. Vernac Daliip.

Order XXII. DIPTEROCARPEai.

Trees with resinous juice, rarely climbing shrubs. Leaves alternate, simple, entire or sinuate-crenate, with parallel nerves; stipules small or large, persistent, deciduous leaving an annular scar. Flowers regular, hermaphrodite, fragrant, in axillary or terminal panicles. Disk connate; tube free campanulate, or short adnate to lobes 5, at first imbricate, later often subvalvate. Sepals 5, lobes 5, at first imbricate, later often subvalvate. Stamens many, or 15 10, hypogynous or subperigynous, free, connate, or adnate; filaments short, often dilated below; anthers 2-celled, sometimes larger, connective often aristate or apiculate. Hiscence longitudinal introrse or lateral. Carpels united 3-locular, rarely 2- or 1-locular ovary, generally immersed in the torus; style single subulate or fleshy, entire or minutely 3-lobed; ovules 2 in each cell lateral, rarely solitary and erect, anatropous. Fruit indehiscent, nut-like, 1- rarely 2-seeded, sometimes capsular and 3-valved, accompanied by the usually calyx, of which 2 or more lobes are generally much enlarged wing-like, seed large, usually invested with thin testa albumen, very rarely (*Ancistrocladus*) with runiina albumen; embryo with usually fleshy, often unequal, cotyledons.

Ovary 1-celled with solitary ovule; stigmas 3, distinct; seeds with ruminant albumen; climbing, stipules minute or 0. . . . *Ancistrocladus*.
 Ovary 3-celled, each cell 2-ovuled; stigmas united, more or less seeds exalbuminous; trees or shrubs, leaves stipulate:—

Fruiting calyx with a distinct tube, quite free from the fruit; lobes much accrescent, erect. . . . *Dipterocarpaceae*.

Fruiting calyx with tube very short or 0:—

Sepals united at the base only, segments subvalvate:—

Two calyx-lobes expanded into narrow wings. . . . *Yateca*.

All calyx-lobes equal in fruit. . . . *Isauxis*.

Sepals quite free, valvate; three outer calyx-lobes expanded in fruit. . . . *Shorea*.

85. *Ancistrocladus* Wall.

Shrubs, climbing with short supra-axillary often arrested and circinate-ly hooked branches; leaves glabrous, coriaceous, usually tufted, entire, reticulate-ly veined; stipules minute, caducous, or 0. Calyx 5-lobed, lobes imbricate, tube at first short, adnate to base of fruit, with lobes unequally sized, finally turbinate and adnate to fruit, with lobes unequally sized, imbricate, spreading. Petals 5, minute. Stamens 5 or 10. Ovary 1-celled, at length subinferior; rounded or shortly cylindrical epigynous; style articulated to ovary, erect, basal or lateral. Seeds solitary, subglobose, intruded between the folds of the copious fleshy albumen 5 embryo short, straight.

• *ANCISTROCLADUS WALLICHII* Planch.; F. B. I. i. 400.

Chittagong.

A- climbing shrub with supra-axillary circinate hooks.

86. *Dipterocarpus* Gaertn. f.

Lofty trees; young branches more or less closely pubescent with stellate or tufted hairs; leaves coriaceous, entire or sinuate, lateral nerves subparallel; petiole somewhat swollen at apex; stipules large, valvate, enclosing the bud, caducous from an annular scar. Flowers large, reddish or white, in short or long racemes. Calyx? tube free, two of the lobes much accrescent. Petals 5, 2 of which are enlarged into erect, slightly connate below. Stamens numerous; anthers numerous. Ovary 3-locular; style filiform; ovules 2 in each locule, indehiscent, nucular, 1-, rarely 2-seeded. Calyx persistent, with the accrescent free calyx-tube, which is surmounted by 2 persistent calyx-lobes, 2 of which are enlarged into erect, g-lanceolate coriaceous wings. Seed adnate to the pericarp; embryo with large, thick, fleshy, unequal cotyledons.

Calyx in fruit with neither ribs nor wings:—

*Ovaries 6 branches not pilose:—

^ n g branches cylindrical, canescent turon 22'

Y 6 branches compressed, glabrous "iosus.

C 6 branches more or less pilose pl

*Wube in fruit 5-ribbed or 5-winged:—

*Angles projecting on upper part of calyx-tube only [p. 252] tuberculatm.

*Angles or wings prolonged to base of tube :— [p. 251]

Calyx-tube with angles very narrowly winged :—

Leaves pilose both above and below ; calyx pilose *scaber.*

Leaves glabrous above, somewhat pubescent beneath *scaber.*

Calyx-tube with angles widely winged :—

Buds ovoid ; leaves truncated to subcordate at base ; *flowers*
long ; enlarged calyx-lobes 1*5 in. wide *flowers*

Buds cylindric ; leaves wedge-shaped to truncated at base *alatus.*
1*5 in. long ; enlarged calyx-lobes .75 in. wide *alatus.*

135. DIPTEROCARPUS TURBINATUS Gaertn. f.; F. B. I. i. 295;
E. D. D. 701.

Tippera; Chittagong.

A tall tree. Beng. Dhulia-garjan.

136. DIPTEROCARPUS LAEVIS Ham.; E. D. D. 685. *turhinatus*
F. I. ii. 612 ; F. B. I. i. 295.

Tippera.

A tall tree. Beng. Telia-garjan.

137. DIPTEROCARPUS PILOSUS Roxb.; F. I. ii. 615 ; F. B. I. i. 296;
E. D. D. 692.

Chittagong.

A tall tree.

138. DIPTEROCARPUS TUBERCULATUS Roxb.; F. B. I. i. 614;
F. B. I. i. 297; E. D. D. 696.

Chittagong.

A tall tree.

139. DIPTEROCARPUS SCABER Ham.; F. B. I. i. 297.

Tippera.

A tall tree. Beng. Garjan.

140. DIPTEROCARPUS COSTATUS Gaertn. f.; F. I. ii. 614. *D. alatus*
F. B. I. i. 298.

Tippera.

A tall tree. Beng. Telia-garjan. %

141. DIPTEROCARPUS INCANUS Roxb.; F. I. ii. 614 ; F. B. I. i. 298;
E. D. D. 682.

Chittagong.

A tall tree. Beng. Garjan.

142. DIPTEROCARPUS ALATUS Roxb.; F. I. ii. 614 ; F. B. I. i. 298;
E. D. D. 676.

Planted not infrequently.

A tall tree. Beng. Garjan.

persistent spreading segments, of which 2 are accrescent as linear wings. *Seeds* 1-2; embryo with fleshy cotyledons.

143. VATICA SCAPHULA Dyer; F. B. I. i. 301; E. D. V. 45.

Hopea scaphula F. I. ii. 611.

Chittagong.

A tall tree. *Beng.* Boilshura.

88. Isauxis Arn.

Medium trees; *leaves* coriaceous, entire, reticulately veined; stipules small caducous. *Flowers* in axillary panicles. *Calyx* 5-lobed, tube short, adnate to base of ovary; lobes subvalvate, equal* *Petals* 5. *Stamens* 15; anthers apiculate. *Ovary* 3-locular; style clavate, stigma 3-toothed; ovules 2 in each loculus. *Fruit* a coriaceous 3-valved capsule resting on the accrescent calyx-tube and surrounded by the somewhat accrescent, equal, spreading lobes. *Seeds* 1-2, embryo with fleshy cotyledons.

144. ISAUXIS LANCEFOLIA King. *Vateria lancecefolia* F. T. ff.

601. *Vatica lancecefolia* F. B. I. i. 302; E. D. V. 40.

Chittagong.

A medium-sized tree. *Vernac.* Mohal.

89. Shorea Koxb.

Trees, with glabrous or pubescent young branches; *leaves* entire^e or subrepand, coriaceous, lateral veins subparallel; stipules large^e coriaceous, persistent, or small caducous. *Flowers* in axillary^{or} terminal laxly paniced cymes; bracts persistent or caducous, or 0. *Calyx* 5-lobed, tube very short, adnate to the thalamus; segme^{ts} imbricate, persistent, and three accrescent in fruit. *Petals* 5. *Stamens* 15, or 20, or numerous; anthers with usually subulat^e cuspidate, rarely blunt connective and obtuse, rarely cuspidate lobes. *Ovary* 3-locular; style subulate, stigma entire or 3-toothed^d; ovules 2 in each loculus. *Fruit* leathery indehiscent, rare^{ly} 2-valved dehiscent, closely surrounded by the persistent ca^o segments of which the three outermost are enlarged into coria^o linear wings. *Seed* usually solitary; embryo with large flesh^y cotyledons.

145. SHOREA ROBUSTA Gaertn. f.; F. I. ii. 615; F. B. I. * 306; E. D. S. 1656.

Tirhut; N.Bengal; Chota Nagpur.

A fine tree. *Vernac.* Sal (*general*); *Santal.* Sarjour; *Uriya* Sekwa.

Order XXIII. MALVACEJE.

Herbs, shrubs, or trees, often stellate-haired, inner bark fibrous, wood soft, juice mucilaginous or rarely acid. *Leaves* alternate, palminerved at base, simple, lobed or rarely digitately compound; stipules 2., sometimes caducous. *Flowers* regular, hermaphrodite, surely dioecious or polygamous; bracteoles 3 or more, scattered or approximated, free or connate, often forming an epicalyx. *Dish* small, often produced upwards between the carpels. *Sepals* 5, valvate, connate at base or free. *Petals* 5, adnate below to staminal column, contorted in bud, often oblique. *Stamens* many, rarely definite; filaments combined in a tube adnate below to the petals, variously divided at the top into antheriferous lobes; anthers 1-celled (very rarely a few 2-celled), cells sinuous linear or reniform; dehiscence longitudinal extrorse. *Carpels* many, whorled, connate or free; styles free, or partly or quite connate, stigmas linear or spatulate on inner face or capitate; ovules 1 or more in each cell axial on the inner angle, amphitropous, raphe usually ventral. Fruit of dry indehiscent or dehiscent cocci, or capsular and loculicidal, sometimes large and woody. *Seeds* obovoid globose or Uniform, glabrous or hairy; albumen mucilaginous, scanty, or 0; embryo curved.

*leaves simple, entire or lobed; sepals leafy :—[p. 256]

†Carpels separating from the axis when ripe as dehiscent or indehiscent cocci:—[p. 256]

Styles as many as the carpels :—

Bracteoles 3; ripe carpels after separating indehiscent, 1-seeded; ovules solitary ascending :—

Stigmas linear; carpels many.....Mahra.

Stigmas capitate; carpels 8-12.....Maivastrum.

Bracteoles 0; ripe carpels after separating dehiscent:—

Carpels without a false dissepiment:—

Ovules solitary pendulous; carpels 1-seeded; forenoon- or noon-flowering plants with small leaves and flowers.....Sida.

Ovules 2 or more; carpels 1- or more-seeded; afternoon- or evening-flowering plants with rather large leaves and medium flowers.....Abutilon.

Carpels with a transverse false dissepiment.....Wissadula.

Style twice as many as carpels; carpels 1-seeded :—

†Carpels opposite sepals, dehiscent after separating; bracteoles 10 [p. 256].....Pavonia.

- Carpels opposite petals, indehiscent after separating :—[p. 255]
 Bracteoles connate 5; carpels spinescent or unarmed; -flowered pink.....**Urena.**
 Bracteoles intermixed with flowers, or 0; flowers in dense heads; carpels unarmed; flowers yellow or white.....**Malachra-**
- fCarpels when ripe forming a capsule :—[p. 255]
 Stigmas spreading; seeds reniform:—
 Ovary 3-celled, ovules 2 in each cell ascending; flowers panicleil, polygamous; small trees.....**Kydia***
 Ovary 5-celled, sometimes spuriously 10-celled from false dissepiments, cells opposite petals, with three or more ovules; flowers axillary.....**Hibiscus.**
- Stigmas cohering in a club-shaped mass:—
 Bracteoles 3, large cordate; seeds cottony.....**GossypiumM***
 Bracteoles 3-5, small; seeds not cottony.....**Thespesia***
- Leaves digitately compound; sepals leathery; bracteoles 0; tall trees :-* [p. 255]
 Calyx 5-cleft; fruit oblong, woody, indehiscent; seeds not packed i¹¹ cotton; staminal tube long; flowers white.....**Adansom****
 Calyx truncate or irregularly toothed; fruit ovoid, dehiscent; seeds packed in cotton; staminal tube short:—
 Valves of capsule woody; flowers red; stamens many.....**Bomba***
 Valves of capsule thickly coriaceous; flowers white; stamens few
Eriodendron-

90. Malva Linn.

Herbs; leaves lobed, pubescent. Flowers axillary fasciculi⁶ⁱ bracteoles 3, distinct. Sepals 5. connate at the base. Petals >> emarginate, slightly connate below. Stamens numerous, in a tube antheriferous to the top, without sterile teeth. Ovary many-locular; styles as many as carpels, stigmas linear; ovules solit[^] in each loculus. Fruit consisting of separating but indehisce^{11*} ripe carpels. Seed solitary, ascending in each separate coccus.

146. MALVA VEBTICILLATA Linn.; F. B. I. i. 320; E. IX M. 12&
 N. Bengal; cultivated throughout Dinajpur and Bog^h
 as a cold weathe[^]etable.
 An erect annual. *Bcng.* Lapha, napha.

91. Malvastrum A. Gray.

Herbs or under shrubs with entire or divided leaves. FloW^{er}^s axillary or in terminal spikes; bracteoles 3, narrow. C^a^s cupular, 5-partite. Petals 5, exceeding the sepals. Sta^{ie}^{lt}^s

numerous, in a tube antheriferous to the top, without sterile teeth. Ovary 5- or more-locular ; styles as many as the carpels, stigmas capitate. Fruit consisting of separating but indehiscent ripe carpels, with or without beaks. Seed solitary, ascending in each cell—trilocular coccus.

Hairs simple ; carpels with three small projecting points...*tricuspidatum*.
Hairs stellate ; carpels rounded or angular not beaked.....*spicatum*.

147. MALVASTRUM TRICUSPIDATUM A. Gray; F. B. I. i. 321.

In waste places; common in W. and C. Bengal.

An erect herb.

148. MALVASTRUM SPICATUM A. Gray; F. B. I. i. 321.

In waste places in C. Bengal, rare.

An erect herb.

92. Sida Linn.

Herbs or undershrubs ; leaves simple or lobed. Flowers sessile or peduncled, solitary or fascicled, axillary or in terminal racemes or heads or spikes; bracteoles 0. Calyx of 5 sepals connate below a tube. Petals 5, free above, connate below and also adnate to the terminal column. Stamens many, connate, tubular below, dividing above into distinct antheriferous filaments. Carpels 5 or more, 5-lobed 1-seriate; styles free as many as carpels, stigmas terminal. Fruit consisting of separating ripe carpels generally 5-angled at the tip and opening irregularly to admit of the fall of the seed. Seed solitary, pendulous or horizontal in each ripe carpel.

Leaves cordate at the base :—

Pedicels jointed in the middle; petiole not so long as leaf-blade; leaves always acute at tip ; carpels 5 :—

Stem trailing ; leaves and slender branches sparingly hispid but not glutinous.....*veronicifolia*.

Stems erect; leaves and stoutish branches glutinous. . . . *glutinosu*.

Pedicels jointed under the flower :—

Leaves always cordate at base, usually acute but sometimes obtuse at tip ; petiole as long as leaf-blade ; carpels 10.....*cordifolia*.

Leaves only sometimes cordate at base, always obtuse at tip; petiole shorter than leaf-blade ; carpels 5.....*spinosa*.

Leaves cuneate at the base :—

Pedicels membranous, never more than 5; branches usually with spiny tubercles below the leaves ; peduncles jointed near the flower,

as long as or longer than the petiole ; leaves hoary beneath, *sometimes cordate at base*; stipules shorter than the petiole.....*spinosa**
Carpels crustaceous, rarely so few as 5; branches never spinescent;
leaves always cuneate at base ; stipules longer than the petiole :—

Leaves nearly glabrous, narrow, acuminate, serrate; peduncle jointed in the middle as long as petiole; carpels 5-9, awned

acuta.

Leaves pubescent to hoary beneath; peduncle longer than petiole, jointed near base :—

Leaf-blade rhomboid acute.....*rhombifolia* var. *tjpi*''

Leaf-blade rhomboid obtuse or subacute

rhombifolia var. *rhomboidea*-

Leaf-blade obovate.....*rhombifolia* var. *obovata*''

149. SIDA VKRONICIFOLIA Lanik. *S. humilis* F. I. iii. 171;
F. B. I. i. 322; E. D. S. 1699.

Everywhere common.

A procumbent branching weed of waste places. *U<'''J'*
Junka ; *Santal*. Jokka sakani.

150. SIDA GLUTINOSA Cav.; F. I. iii. 172. *S. mysorensis* F. 13-[†]
i. 322.

W. Bengal; Behar; Chota Nagpur.

A glutinous erect herb.

151. SIDA COKDIFOM \ T.inn.: F. J. iii. 177; F. B. 1. i. *24;
E. L. S. 1694.

W. Bengal; Jicliur; L'liuUi Nagpur.

A softly hairy erect weed. *Beng*. Berela.

This is often very difficult to distinguish from the cordate-leave^d
form of *S. spinosa* ; the best character in this case is the number^{of}
carpels.

152. SIDA SPINOSA Linn.; F. B. I. i. 323; E. D. S- 1^{714#}
S. alba F. I. iii. 174.

Behar; Chota Nagpur.

A weed. *Beng*. Ban-methi; *Himl*. Jangli-methi-

There are two forms of this species; one has leaves cuneate^{lt} -
base (*S. alba*) ; the other has cordate-based leaves (*S. aliiijolic*)-^{The}
latter is not easily separated, except by its only having 5 carp^{els} > ⁱⁿ ^l
S. cordifolia ; the former is not always easily separated, except by ⁱ
thinner-walled carpels and its peduncles jointed very high up, ^{**m}
certain varieties of *S. rhombifolia*. Owing to the existence ^{of} these

two forms, which are perhaps specifically distinct, it is necessary to show *V. spinosa* twice in the key.

153. SIDA ACUTA Burm.; F. I. iii. 171. *S. carpinifolia* F. B. I. i. 323; E. D. S. 1688.

Everywhere common.

A weed of waste places and waysides. *Beng. and Hind. Kureta.*

154. SIDA RHOMBIFOLIA Linn.; F. I. iii. 176; F. B. I. i. 323. E. D. S. 1703.

Everywhere common in localities like the last.

A shrubby perennial weed. *Beng. Lai berela.*

- 154/2. Var. RHOMBOIDEA F. B. I. i. 324. *S. rhomboidea* F. I. iii. 176; E. D. S. 1706.

Chota Nagpur, common ; Bengal, rare.

A shrubby perennial. *Beng. Swet berela.*

- 154/3. Var. OBOVATA F. B. I. i. 324 ; E. D. S. 1707.

Tirhut; Behar.

A shrubby perennial weed.

93. *Abutilon* Gaertn.

Herbs or undershrubs; stems and lobed or angled *leaves* more or less* downy. *Flowers* usually axillary ; bracteoles 0. *Calyx* of 5 sepals connate below. *Petal** 5, connate below and adnate to base of corolla tube. *Stamens* numerous, united below in a tube, separating above into distinct antheriferous filaments. *Carpels* 5 or more; styles as many as the carpels. *Fruit* of awned blunt ripe carpels that separate from the axis entirely, remain attached by their bases, and dehisce by 2 valves to a unit of escape of the seed. *Seeds* 1 or more in each carpel, from the upper ascending the lower usually suspended or horizontal.

Carpels 5 ; filaments free nearly to the base ; ovules roundish cordate with a long acumen, downy beneath. *juvlyatulruin.*

Petioles 15-20 ; filaments free at apex only :-

Leaves cordate, covered on both sides with white felted down ; peduncles longer than petioles.....*indicum.*

Leaves orbicular cordate with a long point, softly tomentose; peduncles shorter than petioles .. *indicum.*

155. ABUTILON POLYANDRUM Schlecht. ; F. B. I. i. 20; --
 A. 98. *Sida polyandra* F. I. III - 178.
 Chota Nagpur, very common.
 An erect woody herb.
156. ABUTILON INDICUM G. Don; F. B. I. i. 265; ^"
Sida indica F. I. iii. 179.
 Everywhere, a very common weed.
 An erect woody herb. Beng. Petari, jhainpi>
 Jhampi, kanghani; Santal. Miru baha.
 D. A. 82.
157. ABUTILON AVICENNJE Gaertn.; F. B. I. i. 327; 1^*
Sida Abutilon F. I. iii. 178.
 Bengal, Dacca, &c.; somewhat rare.
 An erect herb.

94. *Wissadula Meclik.*

Undershrubs; stems and palmately lobed leaves hairy. Flowers in lax terminal panicles; bracteoles connate below. Petals 5, connate and adnate to calyx below. Stamens numerous, connate in a tube below, divided into separate antheriferous filaments. Carpels usually 1-seriate; styles as many as carpels. Fruit consisting of many-seeded, beaked, dehiscent ripe carpels, each with usually a transverse dissepiment. Seeds 1-3 in each loculus, the lower suspended, the upper ascending.

158. WISSADULA ROSTRATA Phillich. J. F. li. I. 20; --
 W. 91. *Wissadula periplocifolia* F. I. iii. 178.
 C. Bengal, an occasional escape; elsewhere common but not commonly.
 An undershrub.

95. *Pavonia Cav.*

Herbs or undershrubs, with entire, angled or lobed more pubescent leaves. Flowers axillary or clustered at the ends of branches; bracteoles 5 or more, free or forming a tube below calyx. Calyx 5-partite. Petals 5, adnate below to base of column. Stamens numerous, united in a tube, anthers without, truncate or 5-lobed at the apex. Ovary 5-locular; usually opposite the sepals, rarely opposite the petals; styles stigmas capitate; ovules solitary in each loculus. Fruit consisting of ripe carpels that separate from the axis but may sometimes be

in ehi

See <l solita or more or less 2-valved> smooth netted or winged.

159. PAY** m each Cell) ascending.

ONIA ODORATA Wild.; F. I. iii. 214; F. 13. Li. 331; P. 844.

hota Nagpur.

Weed of fields and waste places. Vernac. Bala.

Ijeri os o

96. Urena Linn.

Or less clothed or lobed and stems more

Ptly rigid stellate hairs. Flowers small, sessile or

calyx and usually clustered; bracteoles 5, adnate to the

Petals connate below in a cup. Calyx 5-cleft.

to base of sepals connate at base and there adnate

ant. Stamens many, connate in a tube

or 5-lobed or minutely toothed at the top.

branch opposite the petals; style with 10 stig-

mas capitate; ovules solitary in each loculus.

Smooth, sepals 5, free carpels, covered with hooked bristles or

or solitary in each cocculus ascending.

Leaved; hooked bristles :-

lobata.

base divided beyond the middle into 5 oblong lobes narrowed at the

sinuata.

1^ smooth, farmed. repanda.

LOBATA Linn.; F. I. iii. 182; F. B. I. i. 329; E. D.

U. 29.

Everywhere very common.

Weed of waste places and roadsides.

161 TJ n-okra; Santal. Bhidi janetet.

* R KNA SINUATA Linn.; F. I. iii. 182; F. B. I. i. 329;

E* D- U. 33.

specially frequent in Chota Nagpur; more sparingly in

other provinces.

U. Kunguiya; Hind. Lobloti; Santal, Mota bhidi

162 U R KNA R EPPANNIDA R OXX; pp. II. iii. 182; FF 13. I. i- 330;

D- U. 311. U. palmaia F. I. iii. 182.

Chota Nagpur; common.

A shrub. Santal. Sikuar.

97. *Malachra* Linn.

Herbs; *leaves* angled. *Flowers* in dense heads, ^{intermixed} with bracteoles. *Sepals* 5, connate below. *Petals* 5, connate at the base and there adnate to the base of the staminal ^{ate} *Stamens* numerous, connate below in a short tube, truncate ^{ca} 5-toothed at its mouth and there dividing into many antheriferous ^{fero} filaments. *Carpel** 5, 1-seriate; styles 10; ovules solitary ^{each} in each ^{hem-} carpel. Fruit of 5 ripe carpels separating from the axis ^{form.} selves indehiscent. *Seed* solitary in each carpel, ascending, ^{60.} yeri.

163. MALACHRA CAPITATA Linn.; F. B. I. i. 329; E. V. M. ^{and C.}
Common everywhere, but especially so in [&] Bengal; now extending into the Sundribuns.
A weed of waste places. *Vernac.* Ban-bhindi.

98. *Kydia* Hoxb.

Trees; *leaves* palminerved, usually lobed, stellately ^{hairy} *Flowers* polygamous, in close panicles; bracteoles 4-6, leafy [»] connate below, accrescent and spreading in fruit. *Sepals* 5, connate at the base. *Petals* 5, obcordate, oblique, adnate below ^{to} staminal tube. *Stamens* about 15, united below in a tube ^w separates above the middle into 5 bundles each bearing ^{len} 2-3-locular; style 3-cleft, stigmas 3, peltate, imperfect ^{in fun} functional male flowers; ovules in each loculus 2, ascending- ^{Fruit a} subglobose, obtuse, loculicidally 3-valved capsule. *Seeds* reniform ^{io} furrowed.

164. KYDIA CALYCINA Itoxb.; F. I. iii. 18B; F. 13. I- ^l ³ ^y ^j
E. D. K. 42.
W. Bengal; Behar; Chota Nagpur.
A tree. *Vernac.* Pola.

99. *Hibiscus* Medik. [^]

- Herbs, shrubs, or trees; *leaves* more or less palmately ^{bed,} stipulate. *Flowers* axillary; bracteoles 5 or more, rarely ⁿ free or connate at the base. *Calyx* 5-toothed or 5-fid, ^{*at} spatheous circumscissile. *Petals* 5, connate at the very base ^{and} there adnate to staminal column. *Stamens* numerous, connate ^{in a} tube, truncate or 5-toothed at the apex, giving off near and below ^{the} top many antheriferous filaments bearing reniform anthers. ^v ^{ary}

opposite the sepals; styles 5, connate below, te; ovules 8 or more in each loculus. capsule sometimes with a separating spuriously 10-celled from the formation of glabrous, hairy or woolly.

always free from each other and (except *Solandra* .— [p. 264]

us, 5- rarely 3-toothed, deciduous by basal dehiscence; bracteoles 5-20, always quite free, often smooth:—

Flowers small white; bracteoles short, small, caducous before the *Jiculneus*.

Cei large yellow with a maroon or purple eye; bracteoles narrow and many or wide, leafy and few :—

Bracteoles 6-15, narrow linear :—
 capsule elongated-conical, 7-angled; bracteoles 5-10...*esculentus*.
 capsule short, 5-angled :—
 bracteoles 6-12, much shorter than the oblong capsule

B *Abelmoiiichus**
 bracteoles 10-15, as long as the ovoid capsule.... *cancellatits*.

Leaves almost glabrous; bracteoles glabrous except the tomentose *Mamhot*.

flowers and bracteoles more or less hispid and bristly :—
 flowers only 2 in. across; bracteoles usually 4 only
tetraphyllti.*
 flowers 5-8 in. across:—

bracteoles 4 or 5, flowers under (5 in. across.... *piuiyeiix*.
 bracteoles 6 > flowers over 6 in. across.... *hostilis*.

calyx 5-lobed, persistent :—
 ventricose; bracteoles numerous linear; seeds yellow with a purple eye.... *Trianum*.

calyx lobes equally 3-5-nerved, margins not thickened; bracteoles without appendages; sometimes bracteoles 0:—[pi 264]

capsules smooth, globose, shorter than the calyx; flowers small, pink or white, peduncles as long as the leaves; seeds cottony; bracteoles conspicuous:—[p. 264]

Leaves more or less 3-lobed, glandular beneath; corolla reflexed *hirtus*.
 Leaves entire or only serrate, not glandular; corolla reflexed *micanthus*.

[Hibiscus.

§ Capsules hirsute, oblong acuminate or truncate apicu seeds hairy, but not cottony :—[p. 263]

Flowers small concolorous yellow or white ; peduncles as as petioles ; bracteoles minute or altogether wanting ; sparsely hirsute longer than calyx.

Flowers large yellow with maroon or purple eye; brac conspicuous ; capsules very hairy :—

Capsule longer than calyx, acuminate, not winged; 3-nerved ; all parts densely elutinously hairy

Capsule shorter than calyx, truncate apiculate sepals 5-nerved ; all parts softly villous.

fCalyx-lobes with a prominent midrib and with usually thieve indurated borders :—[p. 263]

Bracteoles bearing on the back an oblong or linear aPP Appendages of bracteoles leafy, oblong; flowers pale with a purple eye:—

Flowers short-peduncled, 2 in. across ; stipules lanceola stem stiffly hirsute and usually prickly.

Flowers on long slender stalks, 1 in. across ; stipules leafy, semi-lunar ; stem always prickly.

Appendages of bracteoles linear, or occasionally 0; white or pale yellow with purple eye; midrib of calyx without gland.

Bracteoles without any appendage on the back :—

Calyx dry, horny in fruit, lobes prickly, midrib of a large gland ; bracteoles adnate to base of calyx-tube ; glabrous.

Calyx fleshy, red, lobes not prickly ; midrib without bracteoles not adnate; seeds hispid.

*fcJhrubs, erect or rarely climbing, or trees; bracteoles always presen often connate at base but never adnate to calyx :—[p. 263]

J Carpels not subdivided by spurious dissepiments:—[p. 265]

Climbing; bracteoles 5, connate at base; leaves with outline, cordate at base; flowers small, yellowish white crimson eye, in many-flowered terminal panicles.

Erect shrubs < trees :—

Bracteoles 6-7 free, leayeg nQt cordate at bftSGj g i a brous: —

Peduncle Peduncle! Petioles ; bracteoles linefr

ec unc es on : than petioles ; bracteoles lanceolate

Bracteoles 10; leav es cordate at base, toinentose or setose .—

Bracteoles free; all parts densely scurfily tomentose; leaves angled or lobed; flower white changing to rose :..... *mutabilis*.
 Rificteoles shortly connate at base; all parts setose; leaves regularly cordate; stipules large spatulate; flower yellow with rose-coloured veins; capsules with no trace of spurious dissepiment; seeds with cottony margins.....: *macrophyllw*.
 +c ar pels more or less completely subdivided by spurious vertical septa;
 br acteoles 10, connate at base into a distinct cup; seeds glabrous:—
 IP- 264]
 F Free portion of bracteoles twice as long as cupular base; carpels 2-locular only at the base; leaves regularly cordate; stipules large spatulate; flowers yellow with rose-coloured veins..... *tortuosant*.
 F Free Portions of bracteoles much shorter than cupular base; carpels completely 2-locular throughout; stipules medium lanceolate; flowers yellow with crimson eye, changing to brownish red :—
 Leaves always cordate, closely white pubescent beneath
*tiliaeeu**
 leaves usually 3-partite, sparsely pubescent beneath..... *tricuspis*.

165 - HIBISCUS FICULNEUS Linn.; F. B. I. i. 340; E. D. H- 215. *H. prostrates* F. I. iii. 208. *H. strictus* F. I. iii. 206. Behar; in fields.

An annual. There are two forms, as indicated in the F-1-1 they are not, however, specifically distinct. Leaves at base rounded cordate, those higher up and younger palmately lobed, lobes rounded sinuses wide. *Beng.* Banderas, jangli bhindi.

10t) - HIBISCUS ESULENTUS Linn.; F. B. I. i- 343* - *" v, a- 196. *H. longifolius* F. I. iii. 210. Everywhere cultivated in gardens. A herb. *Beng.* Bhindi, dheras; *Hind.* Bhindi, ram-turai. The "Lady's Fingers," or Ochro.

x67 - HIBISCUS ABELMOSCHUS Linn.; F. I. iii. 202; F. J. L i-342; E.D.H. 168. N.Bengal; Chittagong. A herb, 2-3 feet high; seeds smell of musk. *Beng.* Kal-

168. HIBISCUS CANCELLATUS Koxb.; F. I. iii. 201; F. i. 342. Behar, Rajmahal Hills; Chota Nagpur, common. *hi-h* A herb with very bristly leaves and stems, 2-d tee* B

[Hibiscus.

H. penta-

169. HIBISCUS MANIHOT Linn.; F. B. I. i. 341.
2>hyllu, 8 F. I. iii. 212.

C. Bengal, naturalised.

A tall almost glabrous herb, native of China. F. ^, I.

170. HIBISCUS TETRAPHYLLUS Koxb.; F. I. iⁱⁱ- 2 Hⁱ
i. 341; E. D. H. 252.

C. Bengal, near Calcutta.

An annual hispid slightly prickly herb.

The locality quoted is taken from the F. I. It appears ne[^] ^[^] have that
been collected near Calcutta since Roxburgh's day. The p[^] ^[^] fl
were issued by Wallich as *H. tetraphyllwt* are, in niy^o Pⁱⁿ on[^], O^{fl} na^{lft}
form of *H. pungent*; they certainly are not the Concan[^] and
plant that agrees with the coloured drawing which Roxbuig^h has[^] ff^c of
his *H. tetraphyllnx*.

171. HIBISCUS PUNGENS Roxb. ; F. I. iii. 213; F<
341.

Behar, Rajmahal Hills, rather common.

A tall, very bristly species with broad, leafy
and very large flowers. br^u c^{teole}*

172. HIBISCUS HOSTILIS Wall.; F. B. I. i. 342.

Chittagong.

Taller, more bristly and with larger flowers than
ceding but hardly deserving to be considered a
species. th^e pre[^] diffe[^]

173. HIBISCUS TRIONUM Linn.; F. B. I. i. 334.

Bengal, cultivated only.

A pubescent annual with orbicular lower leaves an^a 3^{^5}.
partite upper leaves, in shape rather like those of
neus. ficut[^]

174. HIBISCUS HIRTUS Linn.; F. B. I. i. 335. *H. ph*&^m c^{er}^s
F. I. iii. 194.

Behar, frequent; probably, however, only an escape
gardens. f om

In habit somewhat shrubby. Beng. Lal-surgumuni-

175. HIBISCUS MICRANTHUS Linn.; F. B. I. i. 335.
rigidus F. I. iii. 195. H.

Behar; Chota Nagpur.

Shrubby, very like the preceding in habit.

A weed of waste places and roadsides.

Hⁱixnu T
1W'J

MALVACEJ<:.

of>7
- o'

- 176- HIBISCUS SOLANDRA L'Herit.; F. T. iii. 197; F. «• L
i. 336. ff. *piimilus* F, I. iii. 208. ^
Behar, occasional. ^ Uc Bo
177, ^ Weed of waste places and roadsides.
178, HIBISCUS PANDURJEFORMIS Burm.; F. 13. I. i- 338. JI:
tnbulosua F. I. iii. 196.
-ehar; Chota Nagpiir.
A herb.
178, HIBISCUS VITIFOLIUS Linn.; F. - '.200; F. B. T. i. 3rt8;
E- D. H. 263. *H. truncates* F. I. i*. TOO
In all the provinces, common.
A common weed. Roxburgh's *H. 'truncates* is a small
form growing in poor soil. Beng. Ban-kapas.
179- HIBISCUS FURCATUS Roxb.; F. I. iii. 204; F. B. I. i. 335;
E- D. H. 219.
Chota Nagpur.
Erect, shrubby, softly downy and armed with scattered
recurved Pickles.
180, HIBISCUS SURATTENSIS Linn.; F. T. iii. 205; F. B. I. i. 334;
E- D. H. 250.
Bengal, not common; Chittagong.
Weak-stemmed, prostrate, softly downy and sparingly
armed with prickles.
181- HIBISCUS RADIATUS \yilld.; F. I. iii. 209; F. B. I. i. 335.
Bengal, cultivated. *
- *lm*ost shrubby, prickly.
182. HIBISCUS OAHNABINUS Linn.; F. I. Hi. 208; F. B. I.
j' 339; E. D. H! 177.
Tirhut, Behar, and Chota Nagpur; cultivated.
A herb with strict, glabrous, prickly stems. Beng. Mesta-
Pat, ambya-pat; Hind. AmbAri; Santal Dare kudrum;
Uriya Ktmrnia. rtOQ
18 ^ HIBISCUS SABDARIFFA Linn.; F. B. I. i. 340; E. D. H. 233.
Cultivated everywhere.
A well-known vegetable; used-also to make a conserve
like red-currant jelly. Beng.Mest*; JKwrf.Patwa; *bmtai*.
184 Arak kudrum, togot arak. The Rozelle. ---
HIBISCUS SCANDBNS Roxb.; F. T. iii. 200; P. B. I-1- TM-
Chittagong.
A woody climber.

185. HIBISCUS SYRIACUS Linn.; F. I. iii. 195; F. B. I. 191. T * 444»
 In gardens everywhere.
 A shrub. Beng. Sada-juva. T. -g. T.
186. HIBISCUS ROSA-SINENSIS Linn.; F. I. iii. 194; F. B. I. 191. T. -g. T.
 In gardens everywhere. Jasuni.
 A shrub. The shoe flower. Beng. Juva; H*na. ^,
187. HIBISCUS MUTABILIS Linn.; F. I. iii. 201; F. B. I. 191. T. -g. T.
 E. D. H. 224. iaker ^
 In most ga ^.; J
 A small tw»' ^ Vernac. Thalpadma. ^, p,
188. HIBISCUS MAUROPHYLLUS Roxb.; F. B. I. i. 337; F. B. I. 224. H. setosns F. I. iii. 194.
 Chittagong. Br)i(/-
 A small tree or large shrub everywhere setose.
 Kashia udal, kashia palla.
189. HIBISCUS TORTUOSUS Wall.
 Sundribuns.
 A rambling bush.

This is not the variety "tortuosus" of the next species (F. B. I. i. 343) which was issued by Wallich under his number 191 according to the F. B. I., but is the plant from the "kanyary of the Ganges" issued by Wallich as 1913/A, of which the F. B. I. takes no notice. It has much the appearance of the next species in foliage, but the large stipules and long bracteoles amply distinguish it. As regards both stipules and bracteoles it is closely related to *H. macrophyllus*, but it has none of the setae; moreover, its capules are partially subdivided and its seeds are not hairy. This shows that the real *H. macrophyllus* of Roxburgh is that species which was referred by Voigt to *Par. ii.* in the section of *Hibiscus* with subdivided capules. The plant figured by Wallich as *H. macrophyllus* is, however, *H. setosus* where there is not even a rudiment of a false dissepiment. The *H. tortuosus* of Roxburgh is, as his figure shows, only *H. tiliaceus* being separable even as a variety. Wallich is the only botanist who has reported our present plant as a wild species. It is still plentiful in the Calcutta Botanic Gardens, but the only species reported in the Sundribuns of late years has been the well-known "B o W" *tilineus*. *H. tortuosus* ripens its fruits regularly but always bears abortive seeds; it is, with hardly a doubt, a natural hybrid *H. (macrophyllus) x tiliaceus*.

- 190- HIBISCUS TILIACKUS Linn.; F. I. iii. 192; F. B. I. i. 343;
 E- D. H. 255. *H. tortuosus* F. I. iii. 192.

Orissa; Sundribuns ; Chittagong: always near the sea.
 A large shrub or small much-branched tree. *Beng.* Bola;
 DW^aBaria.

- iyi- HIBISCUS TRICUSPIS Banks; F. I. iii. 202; F. B. I. i. 344;
 E- D. H. 261.

Frequently planted.
 A tree. *Vernac.* G-urhul.

100. *Gossypium* Linn.

^{erbs} shrubs, or low trees; *leaves* palmately lobed. *Flowers*
 axillary, large, yellow usually with crimson centre, or purplish,
 Caly* on jointed peduncles; bracteoles 3, large, leafy, cordate.
 Cupular, truncate or slightly 5-toothed. *Petals* connate
 at the base and there adnate to the staminal tube.
Stamens numerous, connate in a tube, truncate or 5-toothed at the
 giving off below the apex many antheriferous filaments.
 ov*⁵-locular; style clavate, 5-grooved at the apex, stigmas 5;
 ca^ms in each loculus numerous. *Fruit* a loculicidally 3-5-valved
 psule. *Seeds* densely clothed with woolly hairs.

IT? *1; *Seeds* free, hotbed with closely adhering silky down ; bracteoles
 J^ovided below the middle.....;.....*kerl^emn.*
 J^omal> shrub ^ 5 seeds black, free or cohering, without adhering
 pub^^{enuej} bracteJ^{les} deeply incisea.....*acuminate*

192. GOSSYPIUM HERBACEUM Linn.; F. I. iii. 184; F. B. I. i- 340 ;
 E- D. G. 404.

Cultivated.
 A small shrub. *Vernac.* Kapas, tula, rui.

- 19^ GOSSYPIUM AGUMZNATUM Boxb.; P. I. Ui. 189 ; E. D. a. 400.
6- barbádense var. acutninata F. B. I. i- 347.

Cultivated.
 A shrub. *Fernac.* Kapas.

101. *Thespeia* Corr.

Shrubs or trees; *leaves* entire or lobed. *Flwcrs* large, axillary,
 *any; bracteoles 5-8 arising from the thickened apex of the
 P^uncle, deciduous. *Calyx* truncate, minutely 5-toothed, or
 5-P<tite. i,etafc 6, oonnate at their bases and there adnate to

staminal column. *Stamens* numerous, united in a tube, at the apex and giving off below the top numerous anther filaments. *Ovary* 4-5-locular; style clavate, furrowed, 5-toothed; ovules in each loculus few. *Fruit* a loculicidal or subindehiscent. *Seeds* glabrous or tomentose.

A tree with glabrous leaves; young branches and unripe capsules with rusty-coloured scales.
 A shrub with leaves sparingly pilose above, tomentose beneath, branches stellate-tomentose, unripe capsules densely hirsute.

194. THESPESIA POPULNEA Corr.; F. B. I. i. 345;

***Hibiscus populneus* F. I. iii. 190.**

Sundribuns, plentiful; elsewhere very often as a parasitic tree. *Beng.* Paras, paras-pipal. The Portia Tree.

195. THESPESIA LAMPAS Dalz. & Gibs.; F. B. I. i.

***Hibiscus Lamjpas* F. I. iii. 198.**

Behar; Chota Nagpur.
 A small bush. *Beng.* Ban-kapas.

102. *Adansonia* Linn.

Trees, with short thick trunk, bulbous below and with spreading branches; *leaves* digitately compound, deciduous. *Flowers* solitary, long peduncled, pendulous. *Calyx* cupular, 5-cleft, 2-bracteolate. *Petals* 5, adnate at base to the staminal column. *Stamens* numerous, connate in a cylindrical tube at the top many antheriferous filaments. *Ovary* 5-10-locular, style long, exserted, divided into as many branches as loculi, stigmas radiating; ovules in each cell numerous. *Fruit* oblong, woody, velvety outside, indehiscent. *Seeds* reniform, a thick testa and scanty albumen, embedded in a mealy pulp.

196. ADANSONIA WOITATA Linn.; F. I. iii. 164; F. B. I.

E.D.A.455.

Planted here and there, especially in the western parts and especially near the tombs of Mussalman. A thick-based spreading tree. *Vernac.* Gorakh-ainh' Baobab.

103. *Bombax* Linn.

Trees; trunk armed with prickles; *leaves* digitately deciduous. *Flowers* axillary or subterminal, solitary or clustered.

Rearing before the leaves. *Calyx* cupular, coriaceous, irregularly lobed; lobes 3-7; bracteoles obsolete but calyx and peduncle united with 2-3 scars. *Petals* 5, adnate below to staminal tube. *Stamens* numerous, connate below in a tube, dividing upwards more or less completely into 5 usually again subdivided filaments; filaments all with 1-celled or occasionally the series next to the style with 2-celled anther. *Ovary* 5-celled, style filiform; *seeds* 5, often very minute; ovules in each cell numerous. *Fruit* a 5-valved capsule, valves woody or coriaceous, woolly. *Seeds* globose, embedded in the woolly packing derived from the endocarp; testa thin; albumen scanty.

197. BOMBAX MALABARICUM DC; F. B. I. i. 349. *B. heptaphyllum* F. I. iii. 167.

In all the provinces, very common.

A prickly stemmed tree with buttressed base.

Vernac. Simal. The Red Cotton-tree.

104. Eriodendron DC.

Trees; trunk armed with prickles; leaves digitately compound, deciduous. Flowers tufted at ends of branches or axillary, appearing before the leaves; bracteoles obsolete. *Calyx* cup-shaped, truncate. *Petals* 5, white. *Stamens* few, 1-seriate, united below in a tube, divided above into 5 or more thick filaments bearing 2-celled or rarely 1-celled anthers with sinuate lobes. *Ovary* ovoid, 5-locular; style cylindrical, dilated, stigma obscurely 5-lobed. *Fruit* a 5-valved capsule, valves coriaceous, woody within. *Seeds* globose, embedded in the woolly packing derived from the endocarp; testa thin; albumen scanty.

198. ERIODENDRON ANFRACTUOSUM DC.; F. B. I. i. 350; E. D. E. 289. *Bombax pentandrum* F. I. iii. 165.

Wanted occasionally in C. Bengal.

A tall tree with buttressed base, the green bark sparingly beset with prickles. Beng. Swet simal. The Kapok, or White Cotton-tree.

Order XXIY. STERCULIACEAE.

Trees or shrubs, rarely climbing, or herbs, often stellate paired; inner bark fibrous, wood soft, juice mucilaginous. Leaves alter-

nate' simple, fcbcd or rarely digitately compound, when simply
Fhhr ^{Penm r ved or} **Palminerved**; stipules free, rarely 0.
 termin ^{or 1-sexualf usually in aullary⁰} cymes. *Disk* 0.
 al cymes. *Disk* 0. % *W_s* 5, connate below rarely through-
 buf, mj rarely free; lobes valvate. *Petals* 5 or 0, contorted »
 1 ua free or sometimes adnate below to staminal column. *Stam*[^]
X ^{em a column or tube} ^{wel} ^f TM [^] ^{fr} [>] often adnate
 scattered outside the tube or colui [^] with 0 to intervening
 staminodes; anthers 2-^{ce} ^U ^a, ^{ce} ^{Us} parallel or diverging, rar ^f
 subconfluent at their tips; dehiscence longitudinal, extrorse.
Carpels rarely solitary, usually 2-5 united in a superior sessile or
 stalked 2-5-, rarely 10-12-locular "vary; styles 1-5, more or to-
 united, rarely free; ovules few Or man y - ' « " o ° * < e inner * & >
 anatropous, raphe ventraJ or lateral [^] dry or flesh y - deb ^{is}.
 cent or indehiscent
 scanty or 0. em [>] ^{W_s s o ^ ^} e s arillate; albumen fleshy ^{ly}
 cotyledons. * " ^ ^ Or curved; with usually

Flowers 1-sexual or polygamous; petals 0; androecium columnar or sessile; mature carpels discrete:—

Anthers numerous, irregu ^{ittrly Clustered} « » • head or ring at ape* of
 stam ^{inal column} cent **Sterculia.**
 Anthers ,, ,, B nng af top of column; ripe carpels indehiscent

Flowers hermaphrodite; present; mature carpels conjoined (only
 1 carpel in *Waltheria*):— **Heritiera.**

*Petals flat, deciduous or persistent:— [p. 273]
 Petals deciduous:—

safes wood T:— CUP US ^{ly} altemato 8 with staminodes; cap-

Anther-cells divaricate or confluent; seeds without wings

Anther-cells p **Helicteres.**

Androeci top; s ^{triod} s ⁰ ^{ComCal} « * « • « « » . from the middle to the

Petals persistent:— ErioW*

Androeciuni tubulRi- »: « s anin eriterous mar 8 in; anthers 15 > in 5

group s of 3, the E 1! groups alternating with 5 staminodes **Pentape*****

- Androecium tubular only at base ; stamens 5, without staminodes:—
- Unilocular**.....**Melochia.**
- IT*** 1, CeUed**Waltheria.**
- Conceive at tabular base, appendaged at the tip; androecium
- with stamens marginal 1-seriate, singly or in groups alternating
-[P. 272]
- Anthers in groups** of 2-4 between each pair of staminodes :—
- Petal** with a clawed ovate blade; capsule 5-winged and 5-
- angled**, truncate at the top > valves hirsute at edges **Abroma.**
- Petal** with a linear 2-fid blade; capsule globular, woody,
- tubercled****Guazuma,**
- Anthers** solitary between each pair of staminodes; petals with a
- ligulate** 2-hd blade; capsule prickly.....**Buettneria,**

105. Sterculia Linn.

Trees or shrubs, with simple, palmately lobed, or compound
 digitate leaves. Flowers in axillary or terminal panicles, polyga-
 mous, tubular, 4-5, partite, often petaloid, Petals 0.
 Anthers in a corolla bearing a head or ring of sessile
 stamens, usually sessile or stipitate, of 4-5 carpels opposite
 the styles connate below ; stigmas free, radiating, as many
 as carpels or more in each carpel. Fruit a cluster of
 (expression) of solitary, follicular, sessile or stipitate,
 naked or woody ripe carpels. Seeds 1 or more,
 folded or arillate, occasionally winged ; albumen 2*partite, flat or
 albumen with cotyledons sometimes thin adherent to the
 sometimes thick and fleshy.

Seeds without wings, few :—

- Carpels boat**-shaped, woody in fruit, forming a 5-rayed star, not open-
 ing till the seeds are ripe ; flowers campanulate :—
- leaves digitate *fa'tida.*
- leaves simple :—
- leaves palmately nerved and palmately lobed or cut :—
- carpels densely covered with stiff fragile hairs; flowers in
 across, \$ fewer than ? *urens.*
- Carpels shortly tomentose with stellate hairs; flowers in
 across, <j more numerous than ? *villosa.*
- leaves serrated, not palmately lobed *Roxburghii.*
- leaves spatulate » membranous, pendulous in fruit, opening long
 before seeds are ripe; flowers tubular *colorata.*
- leaves winged along their upper end, numerous ; carpels globose, woody;

[Sterculia.

199. STERCULIA FICETIDA Linn.; F. I. iii. 155; F. I. j. i. 354;
E. D. S. 2824. ^{I¹ • *}
Planted by roadsides and near temples.
A tall tree. Vernac. Jangli-badám. ^{I. 1. 355;}
200. STERCULIA URENS Roxb.; F. I. iii. 145; F. B.
E. D. S. 2850. ^{yern-^{ac},}
Behar; Chota Nagpur.
A soft-wooded tree with papery outer bark.
Keonji, karaunji, telhec' (*Santal.*), guhu, bah. ^{I. ^ gg5;}
201. STERCULIA VILLOSA Roxb.; F. I. iii. 153 f F. B.
E. D. S. 2861. ^{rhittagoag-}
Behar, Rajmahal Hills; Tippera, ConnHa; ^{U¹ ang^{her};}
A white-barked tree. Hind. Udal; *Santal.* u
XoZ.Sisi, pironja. ^{£. P^s}
202. STERCULIA ROXBURGHII Wall.; F. B. I. ^{m *jo}
S. 2841. *S. lanceefolia* F. I. iii. 150.
Chittagong.
A tree. Vernac. Ushli. ^{-R. I i- ^i}
203. STERCULIA COLORATA Roxb.; F. I. iii. 146; F. B-
E. T. S. 2819. ^{planted-}
Chota Nagpur; Tippera; Chittagong: elsewhere F
A tree. Vernac. Samarri, pisi. ^{T. i. 3 ^i}
204. STERCULIA ALATA Roxb.; F. I. iii. 152; F. B.
E. D. S. 2806.
Chittagong; often planted in other provinces. ^{yern^{ac}>}
A tall handsome tree with buttressed base.
Buddha narikel.

106. Heritiera Ait.

Trees, with simple leathery leaves, lepidote beneath; ^{Flowers}
small, 1-sexual, in axillary panicles. ^{6-toothed} Calyx 5-, rarely 4-
or -cleft. ^{ing} Petals 0. ^{free,} Stamens united in a column with a
2-celled anthers at the apex. ^{Fru^a} Carpels 5-6, almost
short; stigmas 5, thick; ovules solitary in each carpel. ^{See^g}
cluster of woody indehiscent keeled or winged ripe carpels-
solitary; albumen 0; cotyledons fleshy, thick. ^{^ \.}

205. HERITIERA MINOR Roxb.; F. I. iii. 142. *H. Fome** r-
i. 363; E. IX H. 134.

Sundribuns.

A tree with blind rootsnckers. Beng. Snndri.

The ⁿ is the "Sundri" whence the Sundribuns take their name, the ^{sta} statement is frequently made that *H. littoralis* also occurs on the ^{fi} ^{engal} coast. This apparently is not the case; at all events no one has been able to find it in the Sundribuns, though it has ^{ov} ^{<*} and over again been specially hunted for. The fruits of *H. littoralis* are smooth winged on the outer, keeled on the inner side. ^{TMUS} [>] Those of *H. minor* are smaller, somewhat corrugated, furrowed on the ^{side} and less prominently winged on the outer side than those of *H. littoralis* are.

107. Helicteres Linn.

^T ⁶⁸ or Shrubs; ^{leave8} simple [>] pubescence stellate. *Flowers* solitary or fascicled. *Calyx* tubular, often irregular, ^{ts} ^{5<} ^{Pc} [^] ^{zs} ^{5,} ^{ciawed,} ^{e<} ^{uai} or ^{une<} ^{uai,} the claws often ^a ^{Culat} ^{ely} appendaged. *Stamens* united in a column adnate to ^{ur} ^{gynophore,} 5-lobed or 5-toothed at the apex; anthers 2-celled, ^{bet} ^{CCmflUent} and 1-celled, in groups at the apex of the column ^{5,} ^W ^{een} the teeth. *Ovary* at the top of the column, 5-lobed, ^a ^{the} ^{Stigmatic} ^{tips;} styles subulate, more or less united, slightly thickened ^{straight,} ^{* or spirall} ^{twisted} follicles. *Fruit* of ^{seant,} ^{* or spirall} ^{twisted} follicles. *Seeds* tubercled; albumen ^{embryo} with foliaceous cotyledons.

^{Pe} ^{carpels} spirally twisted..... ^{Isora}
^{Pe} ^{carpels} not twisted..... ^{*picata}.

²⁰⁶ « HELICTERES ISORA Linn.; F. I. iii. 143; F. B. I. i- 365; E- D. H. 92.

General throughout our area.

A shrub. *Beng.* Atmora; *Kol.* Sakomsang; *Hind.*

Bhendu, maraphali.

² ^{o7,} HELICTERES SPICATA Colebr.; F. B. I. i. 366.

Chittagong.

A shrub.

108. Pterospermum Schreb.

^T ^{rees} or shrubs; ^{leaves} leathery, oblique below, penninerved, ^{si} ^{pleorlobed,} usually 2-farious; tomentum stellate or sometimes ^{lep} ^{dot} ^{e.} *Flowers* axillary and terminal, usually showy, solitary ^{together,} bracteoles entire or laciniate, persistent or deciduous. *Calyx* of 5 more or less connate sepals. *Petals* 5, large, ^{deciduous} with the calyx. *Stamens* united in a short column,

with 5 ligulate staminodes opposite the petals alternating with groups each containing 3 linear 2-celled apiculate anthers opposite the sepals. *Ovary* within the top of the staminal column, 8-locular; style entire, stigma 5-grooved; ovules in each cell numerous, *ruotia* coriaceous or woody, terete or angled, loculicidally 5-angled capsule. *Seeds* winged above, 2-seriate on the inner angles of capsular chambers; albumen scanty or 0; embryo with plaited or crumpled cotyledons.

Capsules distinctly 5-angled; leaves large, broad..... *accrifolium*
Capsules terete; leaves oblong-lanceolate, semi-sagittate..... *semisagittatum**

208. *PTEROSPERMUM ACERIFOLIUM* Willd.; F. I. lii- 158; F. B. I. i. 368; E. I), p. 1389.

Chittagong; N.Bengal: elsewhere often planted.

vna. r > *A large tree** Vernac Kanak-champa.

*y. *PTEROSPERMUM SEMISAGITTATUM* Ham.; F. I. i. 368; E. I. i. 368.

Chittagong; elsewhere occasionally planted.

109. *Eriolaena* DC.

Trees; leaves simple or lobed; tomentum stellate. *Floors* Hilary, peduncles 1-many-flowered; bracteoles 3-5, lacinate persistent, or small caducous. *Calyx* spathaceous but ultimately 5-partite. *Petals* 5, flat, with dilated tomentose claws. *Stamen* numerous; united in a short column; anthers many-seriate, felled, linear-oblong, on outside of column with no intervening staminodes. *Ovary* sessile; 10-locular; style erect, stigma 5-angled; ovules numerous in each loculus. *Fruit* woody loculicidal capsule. *Seeds* winged above; albumen scanty; embryo with plaited or crumpled cotyledons.

Bracteoles deeply cut; peduncles not exceeding the leaves; valves tubercled or pitted *Hookeriana*.

Bracteoles entire; peduncles longer than the valves; valves not tubercled
quinquelocularis.

210. *ERIOLENA* HoottBiAirA W. & A.; F. B. I. i. 370; E. I. i. 314.

Chota Nagpur; Behar, on hills: often planted in other provinces.

A tree? Vernac, Búndún, gua-goli, gu-kasi,

- ²¹¹ - ERIOL[^]NA QUINQUELOCULARIS Wight; F. B. I. i. 371; E.D. E. 317.

Chota Nagpur, on Parasnath.

A tree.

110. Pentapetes Linn.

leaves* hastate-lanceolate. Flowers axillary; bracteolous. Sepals 5, lanceolate, connate only at the base. Stamens 5. Stamens connate at the base, 15 fertile in long as the others 2-celled, extrorse. Ovary sessile, 5-locular; styles 5, entire, twisted and thickened upwards; ovules 8-12, 2-serial in each chamber, without wings; embryo 2-partite plicate cotyledons.

- ²¹² - PENTAPETES PHCENICEA Linn.; F. B. I. i. 371; E. D. P. 393.

Everywhere common.

A weed of waste places. Beng. K&t-l&ta, bandhuli; Hantal. Bare baha; Hitw7. Dopoharia.

111. Melochia Linn.

Herb or undershrubs with simple more or less softly pubescent leaves. Flowers small, in lax panicles or clusters. Sepals 5, connate below. Petals 5, marcescent. Stamens 5, connate at the base in a tube; anthers 2-celled. Ovary sessile, 5-locular; styles 5, free or connate at the base; 2 in each loculus. Fruit a loculicidally 5-valved capsule. Styles ascending; albumen copious; embryo straight.

- ¹³ - MELOCHIA CORCHORIFOLIA Linn.; F. I. iii. 139; E. D. M. 429.

Everywhere common.

A shrubby weed of waste places. Beng. Tiki-oKra[^] >San[^]Z. Thuiak' arak'.

112. Waltheria Linn.

Herbs or undershrubs with simple leaves; flowers many, small, in dense axillary or terminal clusters, 2-celled; cells innate below. Petals 5. Stamens 5, connate below, confluent at others 2-lobed. Ovary sessile, 1-locular; style excentric, porous.

clavate; ovules 2 ascending. *Fruit* a 2-valved, 1-seecie
Seed ascending; albumen copious; embryo straight.

214. WALTHERIA INDICA Linn.; F. B. I. i. 374.

Everywhere common.

A weed of waste places. *Vernac.* Khar dudhi.

113. Abroma Jacq.

Trees or shrubs; *leaves* cordate or ovate oblong, serru-
 late* or not. *Flowers* in few-flowered leaf-opposed cymes.
Sepals 5, prolonged, connate at the very base only. *Petals* 5, concave below, p-
 a cupular upwards as a cochleate lamina. *Stamens* connate in
 column, with 5 long ataminodea opposite the sepals, a
 lternating with 5 groups containing each 2-4, usually 3, fertile
 filaments; anthers 2-lobed, lobes diverging. *Ovary* sessile,
 5-lobed; styles 5; ovules numerous in each locus.
 membranous, 5-angled, winged, septicidally 5-valved eap-
 villous margins and truncate apex. *Seeds* numerous,
 copious; embryo straight. *albumen*

215. ABROMA AUGUSTA Linn.; F. I. iii. 156; F. JJ. . . I. i. 375;
 E. D. A. 41.

Sometimes planted; occasionally also as an escape-

A shrub, branches downy. *Vernac.* Ulatkamba.

114. Guazuma Plum.

Trees; *leaves* simple, tomentose. *Flowers* in axillary
 cymes. *Calyx* at first spathaceous, at length 5-fld. *Petals* 5, co-
 ncave at the base, lamina divided above into 2 narrow strap-shape
 d pairs. *Stamens* connate in a tubular column, with 5 staminodes opp-
 osite the sepals alternating with bundles each of usually
 2-4 stamens; anthers 2-lobed, lobes diverging. *Ovary* sessile,
 and 5-locular; styles more or less connate; ovules in ea-
 ch loculus numerous. *Fruit* a woody, oblong, tubercled capsule
 numerous; albumen copious; embryo curved. *Seed*

216. GUAZUMA TOMENTOSA Kunth.; F. B. I. i. 375; E. ^-
 G. i. 26.

Often planted by roadsides and near tanks, but also >
 readily self-sown.

*. A tree. *Beny.* Nipal tunth. The Bastard Cedar.

115. Buettneria Linn.

Herbs, shrubs often climbing, or trees, frequently prickly; *lea-
 ves* simple, entire, or lobed. *Flowers* minute, in much-bran-
 hed

axillar! or terminal umbellate cymes. *Sepals* 5, connate below.
Petals 5, with concave claw and long strap-like 2-fld limb. *Sto-*
mens innate in a membranous tabula* column, with 5 staminodes
opposite the sepals alternating with 5 fertile stamens opposite the
JW» I anthers 2-lobed, lobes extrorse. Ot>w* sessile, 5-locular,
**» entire or 5-fia; ovules 2 in each locus. *Fruit* a globose!
" ? * . septicidally 5-valved capsule, with persistent central
?ol««n. S,«?s ascending, solitary in each chamber; albumen
U.
> embryo with large, spirally convolute cotyledons.

! S 5 Glabrous, ovate-acuminate, longer than broad ; a ^ ^

Leaves PiWnlous or tomentose, not longer than broad :-
Lea^ PUberulous, at leng⁸th glabrescent, cordate-oblong, entoe,, jitoee.
cap » pric' ' isperid.
W_s piloJon both'surfaces.'cordaie at base, margin » ^ ^ TM
lobed : a climbing shrub; capsule bristly..... ' aa.

2 " . BUETTNEEU HEBBACBA Boxb.; P. I. i- » » i F. B. I. L L 376,
Behar; Chota Nagpur; Orissa.

A herb. *Beng.* Kambraj; *Sanlal.* Pikku sindur.

'W. BUETTNERIA ASPEEA Colebr.; F. B. I. 377.
Behar, Bajmahal Hills.

A tree.
~19- BUKTTNEMA MLO^Roxb.; F. I. L 618; F. B. 1.1. 3'7-
Chittagong.
A climbing shrub, especially in secondary jungle or on
exposed ridges.

Order XXY. TILIACE*.

> • , shrubs, or rarely herbs; inner bark fibrous, woodi usually
* > ^ - Juice often mucilaginous. *Leaves* alternate, simple, en tire or
toothed. rarely opposite; stipules free, often < ^ « « * * lowers
regular, hennaphrodite, or rarely 1-sexual, in usuaUy cor ymbose
few-. or paniced ma«y.flowered cymes D»* • r ^ t a £ n d .
*Sep** 5, rarely fewer, free or connate b e ow, _v j ^ many,
P«««J. 5 or fewer or 0, imbricate or vaivate. M«« or
t&r ely few, usually inserted on the disk, filaments &te m, ^ ^
con nate at base or united in 5-10 bundles; anthers ^ 2-celled, -
PavaUel, rarely divaricate, and then sometimes s beon fluent at
t h * tips; dehiscence longitudinal extrorse, rarely apical poroug.

Carpels 2-5, united in a free 2-10-locular ovary; styles connate rarely partly or quite free, or stigmas sessile and as many as ^{loc} or connate; ovules 1 or more, if few pendulous from apex ascending from base, if more horizontal often 2-seriate, but ^{ays} from inner angle, anatropous with raphe ventral or lateral. ^{fruit} fleshy or dry, indehiscent or dehiscent, sometimes by a ^{bortion} 1-celled. *Seeds* 1 or more, ascending transverse or pendulous, arillate; albumen fleshy, sometimes scanty, rarely 0; ^{embryo} usually straight, with leafy, rarely fleshy cotyledons.

Petals thin, coloured, unguiculate, entire or subentire, imbricated or twisted in bud; anthers globose or oblong, opening by slits:— [^]

Sepals connate below in a cup; anther-cells ultimately confluent [^] the top, the 5 inner stamens reduced to staminodes ; carpels distm [»] 2-valved Brownloivi»'

Sepals distinct:—

Petals with a more or less adnate basal scale, inserted round base ^{oi} a raised torus ; stamens springing from apex of torus :—

Fruit not prickly, drupaceous ^{^ ^ ia.} 3 5

Fruit prickly, small, globose, indehiscent or separating into ^{ccoci} cocci Triumfetw*¹

Petals without a basal scale, inserted directly [round stamens on contracted touus; capsule opening loculioiddally, many-seeded

Corchorus.

Petals rigid, white or sepaloid, almost always laciniate, induplioate-vah [^] in bud; anthers linear, opening by slits ; stamens arising in groups opp ^{is} site the petals and alternate with the lobes of a 5-lobed torus; sep*¹ distinct; fruit drupaceous Ela ^{a carpus.}

116. Brownlowia Iloxb.

Trees; *leaves* entire, pinnately 3-5-veined; pubescence ^{lepidote.} *Flowers* many, small, in large terminal or axillary panicles. ^{Cm*} *Flowers* campanulate, irregularly 3-5-fid. *Petals* 5, eglandular. *Stamen* ⁸ numerous, rising from a raised torus, many-seriate; filanae*¹*⁸ free ; anthers subglobose; the inner series replaced by 5 lanceolate petaloixJ staminodes opposite the petals. *Ovary* 5-locular; styles subulate, slightly connate; ovules 2 in each locus, ascending- *Fruit* a group of at length almost discrete, 2-valved ripe carpels- *Seeds* solitary in each carpel; albumen 0; cotyledons thick, fleshy. *Leaves* ovate-acute, base cordate, downy beneath ; buds clavate ; ^{caty*} infundibuliform velvety; filaments slender; staminodes linear; ^{panicle} as long as its adjacent leaf ^{elata.}

Leaves l panulate^06-0181*6acuminate» scal y beneath; buds ovoid; calyx cam- than W'aves ca-^' ^aments stout; staminodes petaloid ; panicle shorter Ian ceoluta.

220 • ΔROWNLOWIA ELATA Iloxb.; F. B. I. i. 381; E. D. B. 893. **u>mea elata F. I. ii. 640. Chittagong.

221 tt A taU tree> Verna<c. Mass, masjot. • BROWNLOWU LANCEOLATA Benth.; F. B. I. i. 381; E. D. B. 895. Sundribuns. A tree< Beng. Bola sundri, kedar sundri.

117. Grewia Linn.

m trees or S^ru^s»• iea ves entire, usually palmately 3-9-nerved; pub s cen Ury or + oe S*e^a^e^ blowers usually few, in axillary, extra-axil- *» fre eriUlna^ c y^m es, sometimes numerous paniculate. Sejuils ^Umer'u s^5» glandular at the base, rarely 0. Stamens 8tyle s^ik^i On a raised torus^5 staminodes 0. Ovary 2-4-locular; Pruit ^bulat e, stigma shortly lobed ; locules with 2-many ovules. or few er rUpe^llite » fleshy or fibrous, entire or 2-4-lobed; stones 4 Se eds. See^eac^1~2*seeded with spurious dissepiments between the flat. ds^ascendin g; albumen fleshy, rarely 0; cotyledons

Inflores s^ghtl^o ence termil ial in paniced cymes ; flowers involucrate; stigma above *^o^t^x^ed; dru P^e entirely fleshy ; leaves 3-nerved at base, glabrous Inflor^glafa rescent beneath..... Microcos.

dilai^i^e^nce in axillary clustered cymes ; flowers not involucrate; stigma DZup^wh^e^flin^ged - bating:-

rarely n dr^witna distinct crustaceous rind ; peduncles very short, Lea as long as petioles:- b ves oblong, rough with short stellate tomentum, sub-3-nerved at Lea^s^e; drupes small..... pilosa a ves ov ate or obovate, very harshly scabrid, drupes large sclerophyUa.

Drupe fl6Shy,wrink led when dry, without a crustaceous rind; pedunc les always nearly or quite as long as, usually longer than petioles :--

* leaves broad, strongly 5- or, sometimes, more-nerved at base Ov ate-oblong, oblong, ovate or cordate :—[p. 282] fh pules auricled at base, falcate; leaves obliquely ovate-rhoni boi<i, obtuse or abruptly short-pointed, almost always cordate ;

[Grewia.

hoary or only pubescent beneath ; peduncles not exceeding petioles

Stipules not auriculate at base:—
Peduncles at least twice as long as petioles, or longer:—

Leaves ovate-oblong, apex long acute or acuminate simply serrate; buds subglobose, smooth ; stipules

Leaves rounded or obovate, apex obtuse or shortly pointed, margin double-serrate; buds oblong ribbed:—

Leaves densely pubescent above as well as beneath; petals notched; stipules lanceolate

Leaves sparsely pilose or pubescent or at length above; petals entire:—

Stipules lanceolate ; flower-buds clavate ; turbinate ; a small tree

Stipules linear; flower-buds ovoid; drupes subfaintly 4-lobed; a dwarf shrub with woody usually emitting herbaceous, pubescent shoots

Peduncles slightly if at all exceeding the petioles; or ovoid, smooth; leaves rounded, apex shortly margin simply serrate:—

Leaves closely finely hoary beneath ; stipules linear

Leaves densely tawny-white tomentose beneath lanceolate falcate; cymes many

•Leaves narrow, 3-nerved at base, lanceolate or ovate-lanceolate drupe fleshy:— [p. 281]

Leaves nearly glabrous ; drupes didymous; peduncle more than petiole:—

Leaves ovate-lanceolate ; flowers over 1 in. across ; or small tree, leaves 4-6 in. long

Leaves obovate-lanceolate; flowers about half an inch a small twiggy shrub, leaves 2-3 in. long

Leaves hoary or pubescent; drupes globose or subglobose. Leaves finely pubescent above, closely hoary pubescent peduncles much longer than the petioles

Leaves glabrescent above, densely tomentose but not beneath; peduncles not much longer than the petioles

222. GREWIA MICROCOS Linn. F. 15. I. i. 392; E. !> G, 682.
G. idmifolia F. I. ii, 591.

Chittagong.

A shrub.

223. GREWIA PILOSA Lamk.; F. B. I. i. BB8. *O. carjnmfoha*
F - 1 . ii. 587.

Behar ; Chota Nagpur.

224. GREWIA SCLEROPHYLLA Roxb. *G. scabrophyllci* 1 < I. u. <>*>
F - B. I. i. 387 ; E. D. G. 708.

Chota Nagpur; Chittagong.

225. GREWIA TILLEFOLIA Vahl; F. I. ii. 587 ; F. B. I. i- TM>
E - D. G. 714.

Behar ; Chota Nagpur.

A medium-sized tree. Fernac. Dhamin, olat (&«-
tal.)

226. GREWIA EXCKLSA Vahl; F. B. I. i. 385; E. D- G- 677.
^ . *salvifolia* F. I. ii. 587.

Chota Nagpur, Singhbhum ; Chittagong.

227. GRKWIA ORBICULATA Rottl.; F. B. I. i. ^^6.

Western Behar, rare.

A shrub. Vernac. Dhamin.

228. GREWIA ASIATICA Linn.; F. I. ii. 586; F. B. I. i-886,
K-D. G. 668.

Cultivated in Tirhut, N. Bengal, Behar, Chota Nagpur,
Orissa ; also wild in Chota Nagpur.

A small tree. Vernac. Pharsa; phalsa, sukn (*lima*).

229. GREWIA SAPIDA Roxb. ; F. I. ii. 590; F. B. I. i. B87.

Chota Nagpur ; E. Bengal.

A small shrub sending up annual herbaceous shoots troni
a woody stock. r> n T

230. GREWIA VKSTITA Wall. *G. asiatica* var. *vestda h. u- ±<*
i. 317; E. D. G. 673 partly.

Behar ; Chota Nagpur; Orissa.

A tree. Vernac. Dhamin, olat, bimla.

231. GREWIA CINNAMOMEA Gamble; E. D. G. 673 partly.

Chota Nagpur.

A tree. Vemac. Dhamin, olat.

232. GREWIA L^VIGATA Vahl; F. V, I. i. 389; L- 1> & 670.

^ . *didyma* F. I. ii. 591

[Grewia.

Chota Nagpur ; Orissa ; Behar ; N. Bengal ;
Chittagong.

Duars ;

A small tree or large shrub. *Hind Kath bum* >

Kaki.

T? P. G. 685.

233. GREWIA MULTIFLORA JUSS. ; F. B. I. i. 388; E.

G. sepiaria F. I. ii. 589.

Wanted in

N. Bengal ; in other parts usually only P
hedges.

A small very virgate shrub. *Beng. Pani sara* D. G. 705.

234. GREWIA SALVIFOLIA Heyhe ; F. B. I. i. 386; • • Orissa,

Behar, Monghyr hills; Chota Nagpur, common,
Khurda.

Sitanga,

A shrub or small tree. *Uriya Dhattika*; *Santas*
khorkhorendna ; *Kol. Bursu, cheli.* 91.

235. GREWIA HIRSUTA Vahl; F. I. ii. 587 ; F. B. I. • 6

Chota Nagpur.

A shrub.

118. *Triumfetta* Linn.

Herbs or undershrubs; *leaves* serrate, simple or lobed, ^{pubescence}
stellate. *Flovers* small, in dense cymes. *Sepals* ^{oblong,} ^{ob-}
cave. *Petals* 5. *Stamens* 5, 10, 15 or more ^{springleg} ^{fili} ^{forni} >
fleshy, lobed, glandular torus. *Ovary* 2-5-locular; ^{style} ^{lo} ^{ves.}
stigma 5-toothed; ovules 2 in each loculus. *Fruit* ^{g-6} ^{albumen}
oblong, bristly or spiny, indehiscent or breaking up by
Seeds solitary or paired in each chamber, pendulous,
copious; embryo straight.

Capsules indehiscent or nearly so, echinate, the cells usually one-
seeded:—

Fruit oblong ; leaves roundish.....

Fruit globose :—

Leaves roundish not lobed, blunt, greyish tomentose beneath ^{th as are}
the sepals..... ^{rotul} ^{id.} ^{^j^f.}

Leaves irregularly lobed, acuminate sepals stellate-tomen ^{t se}
^{rhomboi} ^{Ut}

Capsules separating when ripe into 3-4 densely bristly cocci, ^{the cells}
usually 2-seeded:—

Leaves slightly hirsute ; capsules and bristles glabrous—" " ^{annua.}

Leaves densely tomentose beneath, pubescent above; capsules torn ^{ent (os6)}
the bristles more or less pilose..... ^{pilosa.}

- 236. **TRIUMFETTA** NEGLECTA W. & A.; F. li. I. i. 396.
Tirhut; Behar.
- 237. T An annual herb*
• TRIUMFKTTA ROTUNMFOLIA Lamk ; F. B. I. i. 395.
Western Behar.
- 238 T An undershrub
• TRIUMFETTA KHOMBOIDEA Jacq.; F. B. I. i. 395; E. D. T. 889. *T. Bartramia* F. I. ii. 463. *T. irilocularis* F. L *i-462.
Common everywhere.
- 239 T> ^ Weed V undershrub. Beng, 13an-okra; Hind. Chikti.
• TBIUMFETTA ANNUA Linn ., F# ^ t Lit 396; E. D. T. 835.
Behar.
- 240 rr AU annual herb - Vernae. Chikti.
" TI<UMFETTA KLOSA Roth; F. B. I. i. 394; E. D. T. 837.
Behar; Chifctagong.
A herb.

119. Corchorus Linn.

Herb - S or Undershrubs * leaves simple ; pubescence stellate.
 &lowl-? small, ^ eUow, x~2 on axillary or leaf-opposed peduncles.
 Se2>ah) \ riat* -v. Pe^ << ^ 4-5, eglandular. Stamens numerous, several-
 fr oi3 1^ raieIy ,2" ~seriate and twiceas many as the petals, arising
 sti gm -he tor us; filaments free. Ovary 2-6-locular; style short,
 elon a oUplular * ovules numerous in each loculus. Fruit a slender
 ^cull ga T' mrely a Stout 6ub g lobose» smooth tuberculate or prickly,
 SePim ol- ^ 2 ~"5,vaIved capsule, occasionally with transverse dis-
 ce; ents* Seed* numerous, pendulous or horizontal ; albumen
 ^ ; s embryo curved.

B lob -- capsule 3-M, lobes spreading ; leaves without basal bristle-like
 es:—

C capsule thick, truncated, 6-angled, the alternate angles produced
 infc owings; stamens 15-20.....acuttmgulu*.

C capsule rather slender, terete, not winged ; stamens 5-10 ...tridens.
 Be *k of capsule entire, erect:—

capsule puberulous, shortly beaked, without transverse partitions
 £*ween the seeds ; stamens 5-10.....Jasciadari*.

capsule with transverse partitions between the seeds; stamens
 many:—

capsules scabrous or aculeate, beak short; leaves without basal
 lobes [p. 286].....trilocuhtrh>

[Cordornis.

*Capsule globose, not beaked, muricate ; leaves with lower part of petioles prolonged as fine basal lobes [p. 285].
*Capsule globose, not beaked, muricate ; leaves with lower part of petioles prolonged as fine basal lobes [p. 285].

241. CORCHORUS ACUTANGULUS Lamk ; F. B. I. 398 ; C. 1840. *C. fuscus* F. I. ii. 582.

A common weed everywhere.
A spreading or ascending annual herb.

242. CORCHORUS TRIDENS Linn.; F. 13. I. i. 398 ; Tirhut.

An annual herb.

243. CORCHORUS FASCICULARIS Lamk; F. I. i. 398 ; E. D. C. 1858.

Orissa; ChotaNagpur; N.Bengal.

An annual herb. Beng. Jangli-pat, bilna

244. CORCHORUS TRILOCULARIS Linn.; F. I. i. 397; E. D. O. 1875.

Behar; Tirhut.

An annual weed.

245. CORCHORUS OLITORIUS Linn.; F. I. ii- 581 ; E. D. C. 1861. *C. decemangularis* F. I. ii.

Cultivated everywhere.

An annual rains crop. Beng. Pat. Jute.

246. CORCHORUS CAPSULARIS Linn.; F. I. ii. 581; E. D. C. 1846.

Cultivated everywhere.

An annual rains crop. Beng. Pat. Jute.

120. El&ocarpus Linn.

Trees; leaves simple. Flowers hermaphrodite or polygamous, in axillary racemes. Sepals 5, free. Petals 0, at the apex or rarely entire, attached outside the annular disk. Stamens usually numerous, rarely 10, attached in disk, subaggregated in groups opposite the petals and with the disk-lobes when present; anthers innate; de terminal porous. Ovary sessile, 2-5-locular ; style co ovules in each loculus numerous. Fruit a drupe with a hard stone, 3-5-celled or sometimes by abortion 1-celiea. solitary pendulous in each cell; albumen fleshy ; embryo with cotyledons.

Anth^{wa} blunt, or only one anther-cell sharply produced; flowers small,
Pet^{als} glabrous :—

Ov^{ary} 5-celled ; drupe 5-celled and 5-seeded, globular; stamens many;
anthers bearded, one anther-cell acute, longer than the other... *Ganitrus*.

Ovary 3-4-celled ; drupe usually 1-celled, 1-seeded, ovoid:—

Anthers bearded; petiole eglandular :—

Anthers 20 ; racemes about as long as leaves..... *florihutulu**.

Anthers 40-50; racemes shorter than leaves..... *robustus*.

Anthers not bearded ; petiole with two minute glands at the point of
junction with blade..... *lucidus*,

Anth^{ers} cuspidate or aristate at the apex ; flowers medium, petals silky:—

Anther-tails erect; petals narrowed towards base and dilated towards
apex:-,

Racemes as long as leaves; buds lanceolate ; stamens 40-50 ; leaves
cuneate-obovate..... *aristatus*.

Racemes shorter than leaves; buds conical; stamens 30; leaves
obovate-oblong..... *njosus*.

Anther-tails reflexed ; petals wide at base and narrowed towards apex
Varumui.

247. ELJKOAH^{PUS} GANITRUS Roxb.; F. I. ii. 592; F.B.L i. 400;
E. D. B. 57.

Chittagong.

A tree. Dr. Wallich received this from Chittagong, but it
has not been received since. It is common in Malaya ;
Perhaps it is only a planted tree in any part of India.

Bang. Badrakia ; *Hind.* Radrak.

248. ELASOCAR^{PUS} FLORIBUNDUS Bl.; F. B. I. i. 401.

N.Bengal; E.Bengal; Chittagong.

A tree. *Vernac.* Belphoi.

249. ELAEOCAR^{PUS} BUSTUS Roxb.; F. I. ii- 597; F. li. I. i. 402;
E. D. E. 65.

Chittagong, common.

A tree. *Vernac.* Chekio (*Chittagong*).

250. ELAEOCAR^{PUS} LUCIDUS Koxb.; F. I. ii. 600; F. B. I. i- 400.

Chittagong, extremely rare.

A tree. This has only once been collected, at BurJcal, by
Mr. Lister, on April 1, 1876, since Dr. Roxburgh got*
about 100 years ago. It is very like *E. robustus*, but the
glands on the petiole and the beardless stamens very
readily distinguish it.

- 251. **ELÆOCARPUS**
Chittagon
A tree.
- 252. **ELÆOCARPUS**^R
Chittagong. — ** ; F. I. ii. 596 ; P. B. I. i. 405.
A tree.
- 253. **ELÆOCARPUS**
Chittagong. **VARUNUA** Ham. * * B. I. , 407; B. D. E. 71.
A tree.

Order **XXVI. LINEÆ.**

Herbs
 PosiJ S simple, rarely trees. Leaves alternate, rarely opp
 interpetiolar, or V ^ creuate; stipules late
 cymoso. x) * . to ff OMlems regular, hermaphrodite, usual
 staminal rin. or of 2 enfce Or 2 lobed glands adnate * the
 free. P e < a z s ' , * 2 L 7 5 , r f e l y 4 , imbricate, connate below or
 often contort ^ 4 , h ^ o g y i o u 8 or slightly perigynous,
 nati S S " ^ f U g a o i 0 U S - Stamen, J s with J W

anthers versatile 2-cell J d . H t . y P o S y n o U S or subperigynous rmg .
 united asafreo , * " - 5 - c 1 , e u - e h l s c e n c e longitudinal, lateral. C « V *
 » less connate, with f r m . e n * i r e o V a r y ; s ^ l e s 8 " 5 , free or ^ n
 attached to inner . 1 1 . 1 Stigmas; ovules 1 " 2 in ^ o /
 K ' n U t capsula " L h i s c i " 5 f ^ ^ ^ * * > 2-valved cocci. S « *
 compressed; lib t m " 5 f ^ ^ ^ * * > 2-valved cocci. S « *
 me - , straight or curved! " J " " ^ n ^ u s | o n g a s h e a l b u -

Herbs; leaves linear or lanceolate; styles 5; capsules 5-celled ... Linum.
Undershrubs; leaves elliptic-ovate; styles 3-4; ules 3-4-celled
Reinwardtia.

Herbs • U
 glands. S r X 5 p . p T 7 q U i t e e n f c i r e s 5 s t i p u l e s 0 or replaced by
 often with small altem f i s 5 > contorted ^ fugacious. Stamens 5,
 Petals. C W r . , 5 - 1 o C U I S f c a m i n o d e s 5 disk-glands opposite the
 free, stigmas clavate o ^ ^ 10 C U I u s 2 - 1 o c e l l a t e ; styles usually
 Fruit a 5-celled cans. T 1 " ^ J o V U l e s 10, one in each 10 C ellus.
 2-seeded or into 10 1 - s e e d e d & septically into 5 si mple
 scanty; embryo straight. ^ ^ s e e d * c o m p r e s s e d , > t l l b u m e n

- 2.nd4. LINUM USITATISSIMUM Linn.; F. I. ii. 110; F. B. I. i. 410; E. D. L. 385.

Generally cultivated.

A cold-weather crop; flowers blue. In India cultivated 01% as an oil-seed. *Hind*, Chikna,, alsi, tisi; *Beng.* Tisi, masina; *Uriya* Pesu.

122. Reinwardtia Dumort.

Under shrubs; *leaves* alternate, entire, or crenate-serrate; **stipules** subulate, small, fugacious. *Flowers* yellow, showy, in **axillary** and terminal cymose clusters or solitary. *Sepals* 5, **acuminate**. *Petals* 5, contorted, fugacious. *Stamens* 5, hypogynous, connate at the base, alternating with as many subulate **stamens** disk-glands 2-3. *Ovary* 3-5-locular; locules 2-locellate; **styles** 3-4, filiform, free or connate below, stigmas subapitate **ovules** in each locellus solitary. *Fruit* a globose capsule **oblong** [^]to 6-8 cocci. *Seech* reniform, solitary in each coccus.

- 25 5. BEINWARDTIA TRIGYNA Planch.; F. B. I. i. 412; E. D. R. 71. *Linum trigynum* F. I. ii. 110.

Behar, Rajmahal Hills; Chota Nagpur, common.

A tufted subgregarious undershrub, with large yellow flowers.

Order XXYII. MALPIGHUCEM.

Trees or shrubs; often climbing. *Leaves* usually opposite, **entire**; **stipules** small or 0. *Flowers* regular or irregular, hermaphroditic or sometimes polygamous; pedicels articulate, usually **bracteolate**. *Disk* usually obscure. *Sepals* connate in a **ver**al) furnished with a large gland, sometimes all eglandular. *Petals* 5, clawed or sessile, often fimbriate, imbricate. *Stamens* 10, **hypogynous** or subperigynous, all equal or 1 or more much **exceeding** the others; filaments free or connate below; anthers **2-celled** short, connective sometimes thickened; dehiscence **longitudinal** introrse. *Carpels* usually more or less united in a **3-locular**, rarely 2- or 4-locular ovary, rarely distinct; styles usually 3 distinct, occasionally connate, rarely only 1 carpel **with** a style or 1 with a long and 2 with short styles, stigmas **small**; ovules solitary in each carpel or loculus, orthotropous with **long** funide and raphe ventral. *Fruit* usually of one or more

winged samaras, less often (not in Indian species; *Seed* with usually membranous testa; albumen straight or more or less curved, cotyledons often unequal.

Calyx with a single large gland adnate to the pedicel; styles (rarely) 2; carpels 3-winged.

Calyx without a gland; styles 3; carpels broadly winged.

123. *Hiptage* Gaertn.

Shrubs, climbing or suberect; leaves opposite, entire, glabrous, eglandular or with a line of intra-marginal glands; stipules 0. Flowers white, fragrant, with the petals in terminal or axillary racemes or panicles; peduncles articulate pedicels 2-bracteolate. Calyx 5-partite, glands adnate to pedicel. Petals 5, silky. Stamens 10, declinate, one exceeding the rest, all connate at the base. Ovary 8-locular, with appendages 1 or 2; lobes; styles 1-2 circinate, 2-1 rudimentary, ovules solitary in each loculus. Fruit of 1-3 winged samaras. Seed subglobose; embryo with thick unequal cotyledons.

256. HIPTAGK MADABLOTA Gaertn.; F. B. I. i. 418;

H. 285. *Gaertnera racemosa* F. I. ii. 368.

Behar; Chota Nagpur; Chittagong; elsewhere planted.

A very heavy woody climber, with fragrant flowers. *Hind*, and *Beng.* Mahadeo-lata; *Beng.* Basant Baromali.

124. *Aspidopterys* A. Juss.

Shrubs, usually climbing; leaves opposite, entire, eglandular, stipules 0. Flowers small, white or yellow, in axillary or panicles; peduncles bracteate; articulate pedicels often 2-bracteolate. Calyx short, 5-partite, eglandular. Petals 5, not clawed, spreading or reflexed. Stamens 10, all fertile; connate or free at the base. Ovary 3-locular, loculi flattened at the back, winged laterally; styles 3, stigmas capitate; ovules solitary. Fruit of 1-3 samaras, the nucleus sometimes 3- or crested at the back and surrounded by a wide oblong circular marginal wing. Seeds oblong, subtetrate; embryo stigmatic with equal cotyledons.

257. **ASPIDOPTERYH ROTUNDIFOLIA** A. JUBB. A. $\underline{n} U \wedge$ ^{TM*}.
rotundifolia F. P. I. i. 421. *Hircearotiindifoha* Y. l' 11. * ⁴⁸.

Chittagong.

A slender climber.

Order XXVIII. ZYGOPHYLLACEA.

Herbs or shrubs, rarely trees, branches often articulate. *Leaves* opposite or alternate by suppression, 2-foliolate or pinnate, ^{ver}}ely simple? entire or multifid; leaflets entire, not dotted, ^{sci}Ples 2, persistent, occasionally spinescent. *Flowers* Aphrodite, regular or irregular, solitary or paired, axillary, ^{vTM%} 2-bracteolate. *Disk* convex or depressed, rarely annular, eglandular, sometimes 0. *Sepals* 5, occasionally 4, free or rarely connate below, imbricate or rarely valvate or open in bud. *Petals* 5 or 4, rarely 0, hypogynous, free, imbricate or contorted, rarely valvate. *Stamens* in one, less often two, rarely ^{«*ee} whorls, each equal in number to the petals, the filaments ^{of} ten alternately long and short, occasionally some of them ^{ste}le, usually with a basal or median scale, those of the whorl ^{°P}posite them often adnate to the bases of the petals; anthers ^{v<*a}atile; dehiscence longitudinal lateral. *Carpels* usually ^{*,*}, rarely fewer or more, united in a sessile or occasionally stipitate 2-12-lobed -angled or -winged and 2-12-locular ovary, the locun sometimes partially transversely septate; style terminal, rarely subgynobasic central, angled or furrowed with angles stigmatic, ^{°*} with simple discoid stigma or with stigmas 5 free; ovules 2-man. >, ^rely 1, ascending or pendulous, raphe ventral. *Fruit* dehiscent or indehiscent, of 2-10 free or united, often spiny cocci, ^{-vey} ^{«*ely} (*Peganum* sometimes) berry-like. *Seeds* usually pendulous, solitary, very rarely 2 or more, oblong or linear; albumen nesny ^{°r} homy but scanty, sometimes 0; embryo as long as the seed, straight or curved,

leaves opposite, abruptly pinnate, unequal; stamens **2-seriate, all fertile; flowers pseudo-axillary**..... **Tribulus.**
 Leaves alternate, entire or multifid; stamens 3-seriate, **usually some without anthers; flowers leaf-opposed**..... **Peganum.**

125. *Tribulus* Linn.

Prostrate herbs, diffusely branched; *leaves* opposite, ^{usually} unequal, abruptly pinnate, usually silky; *stipules* 2, ^{Flowers}

Order XXIX. GERANIACEÆ.

Herbs, sometimes climbing, rarely shrubs, very rarely trees,
 Leaves opposite or alternate, simple, occasionally peltate, usually
 dentate or lobed, or compound sometimes sensitive; stipules
 usually % Flowers hermaphroditei regular or irregular, usually
 ^illary. Disk inconspicuous or glabridular. Sepals 5, rarely 4 or
 -1 fr<* or connate, imbricate or rarely valvate, the upper sometimes
 ^rred. Petals 3-5 or 0; hypogynous or subperigynous, un-
 bncate, occasionally contorted. Stamens usually 5 1-seriate in
 Regular flowers, 10 or 15 2-3-seriate in regular flowers, fre-
 quently some deformed; filaments filiform or dilated, free or con-
 ^te below; anthers 2-celled versatile; dehiscence longitudinal
 ****. Carpels united in a 3-5-lobed and 3-5-celled ovary, rarely
 2-1-1. Produced upwards with the axis in a style-bearing beak or
 w.ou styles free or only partly connate; stigmas capitate or linear;
 ^es 1-2 > less often more in ea(jh cellj ^ dous anatropous
 ^ raphe ventral. Fruit capsular 3-5-lobed, rarely berrylike
 and indehiscent or late of dehiscence; valves often separating
 elastically. Seed often solitary, pendulous or horizontal; albumen
 rarel v fleshy, usually scanty or 0; embryo straight or curved.

Flowers regular or subregular; sepals herbaceous, not spurred, im-
 bric; stamens 10 :-
 ^ncls on the torus 5, alternating with the subregular petals; capsules
 beaked, the valves when dehiscing rolled elastically upwards; leaves
 simple; herbs..... Geranium.
 Glfnds on the torus 0; capsules not beaked^leaves compound:—;
 Fruits of loculicidally dehiscent capsules; stamens all perfect;
 herbs:—

Valves cohering with axis; leaves digitately compound ...Oxalis.
 Valves detaching from axis; leaves pinnately compound

Biophytum.

Fl<uits of indehiscent berries; often 5 of the stamens reduced to
 r, staminodes; leaves pinnate; trees..... A*T !^
 * tower* irregular; sepals usually petaloid, the upper spurred; stamen..
 ^e*y short, 5, with subconnate anthers:—

Lftlateral petals connate in pairs; fruit capsular, elastically dehiscent
Impatiens.

Later lateral petals free like upper, imbricate; fruit drupaceous, fleshy,
 indehiscent..... **Hydrocera.**

[Geranium.

127. Geranium Linn.

Herbs or undershrubs; *leaves* opposite or alternate, *P*...^{teate} *nerved*; stipules 2. *Flowers* regular, on axillary bract *ogynous* *flowered* or umbellate peduncles. *Sepals* 5. *Petals* 5, by *ll ferti* *imbricate*, alternating with 5 glands. *Stamens* 10, & *te below* *alternately* 5 fertile, 5 imperfect, free or shortly *ag longi-* *Ovary* 5-locular and 5-lobed, beaked; styles 5, stig^{ia} *5-lobed* *tudinal*; ovules 2 superposed in each locus. *tru-u* *ls ugua* *Jly* *5-celled* capsule, with a solitary seed in each cell; carpe *the* *ventrally* splitting and often separating septifragally froⁿ *albumen* *their* beaks coiling elastically upwards. *Seeds* With *convolute* *scanty* or 0; embryo with incumbent imluplicate or c *cotyledons*.

261. GERANIUM OCELLATUM Camb.; F. B. I. i. 433; E. v-
Behar, Parasnath.

A small straggling herb; flowers rose-colonie *d'* *h a*
purple eye. *Hind.* Bhj'mda.

128. Oxalis Linn.

Herbs, rarely undershrubs, with acid juice; *le<iv«** *of* *0*.
alternate, ternately digitate, often subsensitive; *stipu es* *^^*
Flowers regular, on axillary 1- or more-flowered *P ed un o le % ^^ s*
5. *Petals* 5, hypogynou's, contorted; disk without glands. *Ova* *^ 5*.
10, all fertile, free or slightly connate at the base, *., ^^*
locular and 5-lobed; styles 5, stigmas terminal, *oft P lftft ^* *loc ^*
or laciniate; ovules 1 or more in each locus. *FrU* *g ^ ^*
cidally dehiscent capsule with persistent valves. *See s ^ gi*
elastically opening outer coat and a crustaceous testa.
fleshy; embryo straight.*

262. OXALIS CORNICULATA Linn.; F. I. ii. 457; F< *B. j# i. 4&6;*

E. I), o. 547. *O. pnsilla*. F. I. ii. 457. *.. ^ erf*

Common everywhere by roadsides and, espeeia y
tivated ground. *Jit'iid.*

A small "shamrock" with yellow flower* *^ (a*
Amb6ti, chalmori; *Beng.* Amrul, chuka-tvip^{atl}»
Tandi chatom arak'.

129. Biophytum DC.

Annual or sometimes perennial herbs or understand *^ ltf file*
or branched; *leaves* usually sensitive, compound, even-F *sm' ^ te.*

fascicled at top of stem or branches; leaflets opposite, oblique ;
 stipules minute or 0. *Flowers* small, umbellate on terminal
 Pedu ^{cles.} *Se P < d** 5. *Petals* 5, hypogynous, contorted ; disk
 ^with glands < *Stamens* 10, those of the outer series smaller,
 all fo a* ^{sterile,} ****' *Vary* Mocular and 5-lobed; styles 5; stigmas
 termi ^{na,} fid or notche(1 > *ovules* several in each loculus. *Fruit*
 a her- ^{u-} IC! dalJ_y dehi *scent* capsule with spreading persistent valves.
 Seech ^{test,} ^ k' an elastic ally opening outer coat and a crustaceous
 Se JI ^{Se JI} Umen fleshy 5 embryo straight.

Pedicels not as long as the flowers :—
 tube/i! ^{8, 11, 10, 14} pairs; *Pedicels* distinct; seeds with transverse
 Leaf ^{icied,} ridges.....*..... *tensitivum.*
 s m 5-7 pairs ; pedicels very short or 0 ; seeds simply tubercled
Apodiscias.
Sepals not,, exceeding the capsules ; pedicels as long as flowers or longer;
 leaflets 10. -20 pairs; seeds spirally furrowed..... *Reinwardtii.*

263, BIOPHYTUM SKNSITIVUM DC; F. B. I. i. 436. *Oxalis*
sensitiva P. I. u. 457.
 Very common everywhere on roadsides and in cultivated
 ground.

^ small herb with a spreading crown of sensitive leaves.
 264 p ^{ffin, 7} Lak-chana.
 • J-IOPHYTUM APODISCIAS Turcz.; F. B. I. i. 437.
 Behar, Monghyr.

265 -- A herb Very n^e, but rather smaller than » the preceding S-
 o, JilopHYTUM REINWARDTII Walp.; F. B. I. i. 437.
 chota Nagpur, common; Behar; N. Bengal; Chittagong.
Vary, similar to *B. sensitivum.*

130. Averrhoa Linn.

Tre ^{S;} *lea/* »es alternate, compound, odd-pinnate, leaflets sub-
 oppof. ^{S; te} stipules 0. *Flowers* small, regular, in paniced cymes
 inle ^{ar?} XilS or on old wood. *SepaU* 5. *Petals* 5, contorted; disk
 ^itho ^{glands,} *stamens* 10, all perfect or 5 sterile, somewhat
 eonn ⁺ below, ^{ovEir} V 5-ic-cular and 5-lobed, beakless; styles 5,
 free a- ^{g,} *stigm*as capitate; ovules in each cell numerous. *Frmt*
 oblo' ^{ng,} 6-lobed, fleshy, indehiscent. *Seeds* with or without an
 arillu ^{S;} alb umen fleshy but scanty ; embryo straight.

fruits sharply ^{a^} *ded;* seeds arillate t. C. a. r. a. m. b. *Carambola.*
Fruits bluntly angled, seeds wifchout arilluS..... *Uilmbi.*

266. AVBRRHOA CARAMBOLA Linn.; F. I. ii. 450; F. B. I. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

Planted rather frequently everywhere; occasionally self-sown.

A tree with sensitive leaves. JfmrJ. Karmai, Kamarak.

267. AVERRHOA BILIMBI Linn.; F. T. ii. 451; F. B. I. 13. D. A. 1644.

Planted everywhere; and often occurring self-sown.

A tree. Vernac. Bilimbi.

431. Impatiens Linn.

Herbs, rarely shrubby below; leaves simple, opposite or occasionally whorled, sometimes all radical; stipules 0 or represented by glands at base of petiole. Flowers irregular, pinate, solitary, few or many, on scapes or on axillary or terminal peduncles. Sepals 3, rarely 5, imbricate, the 2 anterior present minute, the 2 lateral small flat usually herbaceous, posterior (by torsion placed in front of the flower) large and spurred or saccate. Petals 3 or 5, anterior outmost large, lateral 2-lobed or (if the petals be viewed as normally 2 connate petals. Dish 0. Stamens 5; filaments short broad, anthers connivent, usually connate. Ovary oblong, 5-locular stigma sessile 5-toothed; ovules numerous 1-seriate in loculus. Fruit a 5-valved loculicidal capsule, the valves separating elastically from the axis. Seeds tubercled or smooth or glabrous; albumen 0; embryo straight.

268. IMPATIENS BALSAMINA Linn.; F. I. i. 651; F. B. I. Chota Nagpur, very common near police outposts and villages, but also now extending far into the forests. A herb. Hind. Gul-mendi; Beng. Dupati; Haragaura.

132. Hydrocera Bl.

Herbs, erect, aquatic; leaves alternate narrow; stipules 0. Flowers irregular, on short axillary 1-2-flowered peduncles. Sepals 5, petaloid, imbricate; the 2 lateral outer flat, the posterior spurred. Petals 5, anterior outmost in bud large, concave; disk 0. Stamens 5; filaments short broad; anthers connate. Ovary 0-locular; stigmas 5, sessile; ovules 2-3 in each loculus. Fruit

JUTACEAE

Spacfcous indehiscent, with a bony truncate 5-celled stone.
Se < * in each cell solitary, curved, corrugated; albumen u,
en Ary0 with rather thick cotyledons.

* » • HYDMCMA TUUXOEA W. & A.; F. B. I. i. 483. I » ^ < » ' s
« « fan8 F. I. i. 652.

E. Bengal, Faridpur.

An annual water weed with fistular floating stems
emitting roots at the nodes. Beng. Doinuti.

Order XXX. RUTACEJE.

Trees or shrubs, sometimes climbing, rawly herbs. Leaves
abundantly gland-dotted, opposite or alternate, usually compoimd,
st Pules 0. mowen usually hermaphrodite and regular, in a * H * y
Or famtial simple or paniced cymes, rarely racemose. J * . *
^ lar, create or lobed, sometimes considerably ^ f j t
? W * 4-5, almost always imbricate, free or connate. Petal. 4W,
W n o u s , rarely subperigynous, free, imbricate or valvate.
Stands 4-5 or 8-10, rardy more; filaments usually free, hypogy-
* * •. inserted outside the disk; anthers 2-celled, usually versatUe,
d < * i Bcenoe longitudinal, introrse. Car ^ U 4-5, free or connata, ui
Superior ovary. st les as many, {1-ee or more or less connate. '
str gmas terminal, entire or lobed; ovules usually 2 in each cell,
WBt MneB numerous, superposed on the inner TM & > TM f * ^
* * ? ruUot 1-4 dehiscent cocci, or a capsule, « " f ^ J *
and drupaceous or ben-y-like and then often luge. ' 6 « * » f * ^
Soli Wy in the cells; a, bulnen fleshy or 0; embryo staught or
curved.

-ULEATA * - -

Flow ers usuall y poi yg 'k < to F - L L 6 1 b , JS ; carpels 2-ovulecl:--
o vary deeply 2-5-lc -ilar ventral, more or less free ;
Car Pels dehiscent; s ' a ^ k 1 3 ' sari' flowe rs polygamous; leaves 6- or
morefnimKt * • n Zanthoxyium.
« ie-ioliate; stem pnckl. t paves
Ov ary enti w, style simple; carpels syncarpous indehiscent,
1-3-toliate:—
Stem prickly ; flowers monoecious; petals and stamens e a ^ ^ dalia.

Stem unarmed; flowers polygamous; petals 4, stamenS 8 A cronychia.

Flowers usually hermaphrodite; ovary entire; style simple; iiii
indehiscent:—

Zanthoxylum.

Style short persistent; ovules solitary in each cell; leaves 3-foliolate to pinnate **Glycosmis.**

Style articulate at top of ovary, deciduous :—

Ovules 1-2 in each loculus; stamens 10 or fewer :—

Unarmed plants ; leaves pinnate with leaflets alternate .

Petals imbricate; cotyledons fleshy plano-convex :— **Clausena.**

Filaments dilated below, stamens 8-10 **Murraya.**

Filaments linear-subulate, stamens 10. **its line^{III}.**

Petals valvate ; cotyledons leafy corrugated; filaments subulate, stamens 10. **elufli* ne^s opP^o**

Armed plants; leaves pinnate or 3-foliolate with leaflets, or 1-foliolate :— ***te#—***

Leaves 3-9-, sometimes more-foliolate, leaflets opposite

Calyx distinctly lobed :— **Triphasia.**

Calyx 3-lobed ; stamens 6 ; leaflets always 3 or more, **or more,**

Calyx 4-5-lobed ; stamens 8 or 10; leaflets 5 **Limonia.**

rarely 3. **margin ;**

Calyx cupular with entire or obscurely 4-6-toothed ; stamens 8 or 10 ; leaflets always 3. **Lunga.**

Leaves 1-foliolate:—

Anthers linear-oblong, stamens 8-10; disk elongate **mignya.**

Anthers ovate-cordate, stamens 5-8 ; disk cup-shaped **Paraa**

Atalantia.

Ovules more than 2 in each loculus ; stamens 10 or more ; armed trees with large fruits :—

Stamens 10-12; ovary incompletely 5-locular ; leaves pinnate; rind of fruit woody; flowers polygamous. **Feronia.**

Stamens 20-60; ovary usually many-locular; flowers polygamous; phrodite :— **i. i. 65i**

Leaves 3-foliolate; stamens 10-12; rind of fruit woody **Figle.**

Leaves 1-foliolate ; stamens 10-12; rind of fruit leathery. **Citrus.**

133. Zanthoxylum Linn.

Shrubs or trees, usually armed with stout prickles; leaves alternate, 3-foliolate or imparipinnate ; leaflets usually opposite, entire or crenate, often oblique; stipules 0. Flowers small, in axillary or terminal peduncled cymes, often 1-sexual. Calyx 3-8-nerved, rarely absent. Petals 3-5, rarely absent, imbricate or induplicate-valvate. Stamens 3-5, hypogynous, or reduced to scales &

flowers; disk small or obsolete. *Ovary* in * flower rudi-
 ***** in ^ or ? flowers of 1-5 oblique Mocular carpels₂
 styles sublateral, free or connate above, stigmas capitate; ovules₂
 lu <*ch loculus, usually collateral. *Fruit* of 1-5 globose, con-
 aceous or fleshy, 1-seeded carpels dehiscing by the ventral suture,
 e^ocarp hard, separating or not. *Seed* oblong or compressed or
 4°bo_{se}, often pendent by a longish funicle; testa shining haul,
 ul^men fleshy; embryo straight.

^0. ZANTHOXYLUM BUDRUNGA Wall.; F. B. I. i- ^ o ; L. " •
 Z. 23. *Fagara Budrunga* F. I. i- 417.

Chittagong.

M I

A tree armed with prickles; leaves pinnate; leaflets
 with large glands in the crenatures of the blade. *Vernac.*
 Badrang.

134. *Toddalia* Jass.

Kauh., usually undent, stems prickly; ^ alternate, 1-3-
 tol'olate, petioles prickly; leaflets sessile; stipules 0. Ko^{wers}
 S1^U, 1-sexual, in axillary or terminal cymes or panicles. C<*V*
 fort, 2-5-lobed or -partite. *Petals* 2-5, imbricate or valvate.
 lament in j flowers 2, 4, 5, or if 8 with alternately fertile ami
 s'erile filaments, inserted at the base of a distinct or obsolete disk,
 0""* in t flower rudimentary or 4-lobed, in t flower oblong o;
 Klobose, 2-7- (rarely 1-) locular; style short or 0, stigma capitate,
 ov«les 2, either superposed or collateral in each cell. *TM^!"T
 globose'or lobed, coriaceous or fleshy, indehiscent, 2-7-ccue^a;
 cel's 1-, rarely 2-seeded. *Seeds* angular, renifown; testa coriaceous,
 albumen fleshy; embryo curved.

2 «. TODDAUA AociiATA Ters.; F. 13. I. i. 497; H. D. T. 489.

Scoj)olia aculcata F. I. i. 616.

Orissa.

A rambling prickly sarmentosc shrub. *Vernae.* Kacia
 todali.

135. *Acronychial*brst.

T^es, unarmed; leaves opposite or alternate, 1-, rarely B-f l' -
 late J leaflets entire; stipules 0. *Flowers* medium or small U p o ^
 gamous, in axillary and terminal corymbs. *Calyx* 4-lobed b
 imbricate, sometimes accrescent. *Petal.* 4, valvate, lute^{ly}
 fading. *Stamens* 8, inserted below a thick angled hirsute
 d^ 5 filaments alternately longer and shorter. - vary 4-locular,

3<X>

BENGAL PLANTS.

[J< onychia.

tomentose, inserted in hollow of disk; style terming, stigma
4-furrowed; ovules 2 superposed in each locus. Frivlinl h i g-
cent drupaceous, or dehiscent loculicidally valved, 4-celled. ^,
1-2 in each cell, often pendulous from the funicle; testa
albumen fleshy; embryo straight. Seeds

272. ACRONYCHIA LAURIFOLIA Bl.; F. 13.L i. 498.

Chittagong.

A small tree or large shrub.

136. Glycosmis Coir.

Shrubs, rarely trees, unarmed; leaves 1-foliolate or i pari-
pinnate; leaflets alternate; stipules 0. Flowers small, in. ** li
rarely terminal panicles. Calyx 4-5-partite; lobes broad, imbr
cate. Petals 4-5, imbricate. Stamens 8 or 10, free, t f is
outside the disk; filaments dilated below; anthers small, often
with a gland at back or tip. Ovary 2-5-locular; style very short,
persistent, stigma capitate; ovules solitary, pendulous i>
loculus. Fruit small, dry or fleshy, 1-3-seeded, berry-like- Seeds
oblong, testa membranous; albumen 0; embryo with thick equal
cotyledon*.

Ovary connate at base with disk; leaflets usually 3. 4> cm>hl li.
Ovary constricted at base and free from disk; leaflets usually 5

enthyll* var: >> it. uita.

273. GLYOOSMIS PKNTAPHYLLA Corr.; F. B. I. k 499<* B. B.

G. 271. Limonia yentaphylla F. I. ii. 381.

Very common in thickets near villages, everywhere.

A low shrub. Bind. Ban-nimbu; Beng. Ashhoura. B. ^

273/2. Var. NITIDA. G. ymtaphylla var. 2, sub-var. 4, F. B.
i. 500.

Chittagong.

137. Clausena Burni.

Shrubs or trees, unarmed; leaves imparipinnate, leaflets ra& m
branous, alternate; stipules 0! Flowers small, in termi& al o
axillary cymes racemes or panicles. Calyx 4-5-lobed or "P artite*
Petals 4-5, free, membranous, imbricate. Stamens 8 or 1 ^
inserted outside an elongated disk; filaments alternately shor ^
and longer, dilated or arched and concave below the narrow W*
Ovary stipitate, 4-5-, rarely 2- or 3-locular; style usually distinct,

deciduous, stigma obtuse entire; ovules 2, collateral or
superperry-like. Fruit small, oblong or globose,
berry-like. Seeds 1-2 in each cell, oblong; testa mem-
branous; embryo with large equal cotyledons.

incl. « terrainal:—

Usually 7-9, inflorescence and leaves glabrous; leaflets 5-9
hardly oblique; flowers usually 4-, rarely 5-merous

ovary hispid or pubescent; leaflets oblique:—

leaves anthers pubescent; leaflets 15-30;

flowers 4-merous; inflorescence more or less pubescent; leaflets 15-30;

Leaves 4-merous; ovary 4-celled. excavata.

Leaves 5-merous; ovary usually 5-celled. Wompi.

Racemes axillary; all parts softly pilose; ovary glabrous; flowers
4-merous; leaflets 5-17. *u.frutko*a.

274. LAUSBEL* A HEPTAPHYLLA W. & A. J. F. B. T. i. 504.

Amyris Jteptaphyila F. I. ii. 248.

C. and E. Bengal; Chittagong.
A. Ranching bush. Beng. Karan-phal.

275. CLAVATA Burm.; if. B. I. i. 504. Amyris

sumatra F. I. ii. 250. A. punctata F. I. ii. 251.

Chittagong 5 Chota Nagpur, Singbhum.

276. A somewhat fetid tree.

AUENA WAMPI Blanco; F. B. I. i. 505. Cookie punc-

Chota Nagpur planted,

A small glabrous tree. Vernac. Wangpi (front the

LAUSBNA SUFFRUTICOSA W. & A.; F. 13. I. i. 506.

Amyris suir>L*JL*Maowp m j, ij. 250,

Chittagong.

A shrub.

138. Murraya Linn.

Shrubs or small trees, unarmed; leaves imparipinnate; leaflets
ornate, alternate; base oblique or cuneate; -stipules 0. Flowers
solitary or in axillary cymes or terminal corymbs. Calyx
5-lobed; lobes free. Stamens 10, inserted
alternately shorter and longer. Ovary
toward the long deciduous style.

BENGAL PLANTS.

stigma capitate ; ovules 1, or 2 superposed or collated in each loculus. *Fruit* 1-2-celled, 1-2-seeded, oblong or ovoid, beyond. Seed woolly or glabrous; albumen 0; cotyledons large equal.

Petals-5 in. long ; leaflets 3-8 ; a bush
 Petals-2 in. long; leaflets 10-20; a tree

278. MURRAYA EXOTICA Linn.; F. I. ii. 374; F. #. *.
 E. D. M. 797.

Chota Nagpur; Behar.

A bush, or sometimes subarboreous. *Beng.* KanH¹,
 Marchula.

279. MURRAYA KOENIGII Spreng.; F. B. I. i. 503; E. »-
Bergera Koenigii F. I. ii. 375.

Chota Nagpur; Behar; Bengal[^]

A small spreading tree. *Beng.* Barsanga;
 sanga, kathnim.

139. *Micromelum* Bl.

Trees, unarmed; ZeatJesimparipinnate; leaflets alternate, stipules 0; *Flowers* in large terminal flat panicles. *Oa* shaped, 3-5-toothed or -lobed. *Petals* 5, free, thick, valvate. *Stamens* 10, free, inserted round the disk; linear, alternately shorter and longer. *Ovary* 5-, rarely 2-6- style constricted at the base, deciduous, stigma capitate or ovules 2, superposed in each loculus. *Fruit* small, spirally twisted septa, usually 1-2-secded. *Seeds* oblong membranous ; albumen 0; cotyledons leafy, corrugate.

280. MICROMELUM PUBESGENS Bl.; F. B. I. i.
integerrima F. I. ii. 376.

Chittagong; E. Bengal, Dacca; N. Bengal, Chota Nagpur, Singbhum.

A small spreading tree. *Vernac.* Ban-kunch.

140. *Triphasia* Lour.

Shrubs, armed with strongish straight spines; *leaves* sessile, 3-foliolate; leaflets obtuse, crenate, lateral opposite stipules 0. *Flowers* solitary or in 3-flowered axillary *Calyx* 3-lobed. *Petals* 3, free, imbricate, odorous. inserted round the fleshy dink, free ; filaments dilated *Ovary* ovoid, 3-locular, narrowed into the slender deciduous

stigma obtuse Or capitata*, 3-lobed; ovules solitary in each cell.
 Fruit snail-like, fleshy, ovoid, berry-like, 1-3-celled and 1-3-seeded.
 Sec* oblong, embedded in mucilage; testa coriaceous; albumen 0;
 embryo with 1-2 often unequal or lobed cotyledons.

L TR ^{ASIA} AURIANTIOLA Lour. *T. trifoliata* F. B. I. L W ; E.B.T.631.

^n gardens in all the provinces.

f glabrous spiny shrub; apparently introduced to India from China - Vernac. Chini Narangi.

141. Limonia Linn.

Shrubs or small trees, often armed with spines; leaves alternate, 3-foliolate; stem woody; leaflets usually opposite, petiole winged; stipules 0. Flowers in fascicles racemes or panicles, Calyx 4-lobed or -partite. Petals 4-5, imbricate. Stamens 8 or 10, inserted outside the disk; filaments subulate; anthers stout, distinct. Ovary 4-5-locular, oblong; style short, stigma capitate or obtuse; ovules 1-2 in each cell, indehiscent, berry-like, 1-4-celled and 1-4-fleshy, embedded in mucilage; albumen 0; cotyledons

282 r n
 LIMONJA ACIWSSIMA Linn.; F. B. I. i. 507 ; E. D. L. 362.
 - crenulata F. I. ii. 381.

Behar; Chota Nagpur.

A small glabrous spiny tree. Hind. Beli, belsian (Chota Nagpur); Vriya Bhenba.

142. LuYunga Ham.

Shrub, armed with axillary spines; leaves 3-foliolate; leaflets coriaceous, entire; stipules 0. Flowers in axillary fascicles racemes or panicles. Calyx cupular, mouth entire or obscurely 5-lobed. Petals 5, free, thick, imbricate. Stamens 8 or 10, inserted outside the disk; filaments equal or alternately shorter than the anthers, connate, nearly throughout, in a tube. Ovary 2-4-locular, stout deciduous, stigma capitate; ovules 1-2 in each loculus. Fruit large, ellipsoid, berry-like, with a thick leathery rind. Seeds 2-3, large, ovoid; testa membranous, nerved; albumen 0; cotyledons fleshy, equal,

283. LUVUNGA SCANDENS Ham.; F. 1*. I. *. P> -
scandens F. I. ii. 380.

Tippera; Chittagong.

A large glabrous climbing shrub. Vernac.

143. Paramignya Wight.

Shrubs, erect or climbing, armed with axillary
 armed; *leaves* 1-foliolate but of ten the articulation
 subcoriaceous, evergreen; stipules 0. *Flowers*
 axillary, solitary or fascicled. *Calyx* cup-shaped, or
 4-5-lobed. *Petals* 4-5, free, imbricate or rarely valvate.
 8 or 10, inserted round the columnar disk; filaments
 equal; anthers linear-oblong. *Ovary* 3-5-locular;
 deciduous, stigma capitate; ovules solitary, or 2 obliquely
 posed in each loculus. *Fruit* ovoid or subglobose, berry-
 like, contracted at the base, rind coriaceous. *Seeds*
 1-5, large, oblong, much compressed; testa membranous; albumen
 fleshy, equal. 0 cotyledons

284. PARAMIGNYA CITRIFOLIA Hook, f.; F. «. L > 510. *Limonia*
citrifolia F. I. ii. 379.

Chittagong.

A branching, rigid, spiny shrub.

144. Atalantia Corr.

Shrubs or trees, armed or unarmed; *leaves* alternate,
 coriaceous, evergreen, entire or crenulate; -stipules occur at the
 stipule-like scales belonging to undeveloped buds at
 base of the petioles and spines. *Flowers* in axillary
 rarely solitary, or in axillary rarely terminal corymbs
Calyx 3-5-lobed or -partite, sometimes splitting irregular
 3-5, free, or adnate to stamens and united with them
 imbricate. *Stamens* 6 or 8, rarely 15-20, inserted outside
 filaments subequal or alternately shorter and long
 irregularly connate; anthers short, cordate at base. *Ovary*
 2- or 4-locular. rarely 3- or 5-locular; style stout,
 stigma capitate; ovules solitary or 2 collateral in each cell-
 large subglobose, berry-like, with thick leathery rind, 1
 and 1-5-seeded. *Seeds* oblong, large; albumen 0; embryo
 fleshy cotyledons.

285. ATALANTIA MONOPHYLLA Corr.; F. 13. I. i- 511;

A. 1G01. *Limonia monophylla* F. I. ii. 378.

Behar; Orissa.

A small tree, with usually stout axillary spines. *Uriya* arguni.

145. *Feronia Gaertn.*

leaves alternate, imparipinnate; entire, petiole winged or not; stipules gamous, in terminal or lateral loose panicles or deciduous. Petals 5, rarely perfect. Stamens 10 or 12 a few sometimes imvillous. Ovary oblong, 5-6 locular, at length numerous, many-seriate, crowded on the with pulp. Seeds embedded in embryo with thick fleshy cotyledons. * KRONU ELEPHANTUM Corr.; F. I. ii. 411; F. B. I. i. 516; k D- P. 53.

W. Bengal; Behar; Chota Nagpur..

A small deciduous spiny tree. *Kind*, and *Beng.* Kath- & *Uht/a* Koeta; *Santal.* Kainta. The Wood-Apple, * Elephant-Apple.

146. *Egletes COIT.*

spikes; Zeave* alternate, 3-foliolate; leaflets stipules 0. Flowers large, white, in 4-5-toothed, deciduous. Petals 5, spreading. Stamens numerous (30-60), inserted outside, filaments free, short, subulate. Ovary ovoid, loculi peripheral round a thick axis; style short; long or fusiform, deciduous; ovules numerous, 2-seriate. Fruit large, globose ovoid or reniform, celled; woody. Seeds oblong, embedded in acid pulp; testa mucilaginous and woolly. Embryo with thick fleshy cotyledons.

287. EGLE MARMELOS Corr.; F. I. ii. 579; F. B. I. i. 516; E- D. A. 534.

Common everywhere.

A small deciduous spiny tree. *Hind.* B'el, siri-phal; *Beng.* BCJ, vilva. The Bael-Fruit.

147. Citrus Linn.

Shrubs or trees, usually armed with spines; *leaves* alternate, 1-foliolate, coriaceous, evergreen, petiole usually winged; *Flowers* axillary, solitary or in small cymes or panicles; cupular or urceolate, 3-5-fid. *Petals* 4-8, linear-oblong, thick, ciliate. *Stamens* numerous (20-60), inserted outside the large filaments irregularly polyadelphous below, bundles at the base. *Ovary* many-locular; style stout, deciduous, capitate; ovules 4-8, 2-seriate in each loculus. *Fruit* large, or globose, berry-like, fleshy, many-celled, with membranous septa; cells few-seeded and filled with transverse fusiform cells. *Seeds* horizontal or pendulous; testa coriaceous or branous; albumen 0; embryo with large fleshy cotyledons.

Young shoots glabrous; leaflet glabrous:—

Twigs purple; flowers pinkish, often 1-sexual; fruit with usually thick skin and mamillate; juice subacid (*typica*) or very acid:—

Leaflet ovate; petiole distinct, margined or winged; fruit

Leaflet elliptic-oblong; petiole very short, linear or slightly; fruit small..... *medical**

Twigs greenish-white; flowers white, always hermaphrodite, usually broadly winged; fruit medium, with usually thin skin mamillate..... *white*

Young shoots and nerves of leaves beneath pubescent; flowers white; fruits large..... "

288. CITRUS MEDICA Linn.; F. B. I. i. 514; E. D. C. 127[^]

TYPICA. (7. *medica*, F. I. iii. 392 partly.

Cultivated very sparingly.

A small tree. *Beng.* Beg-pura; *Hind.* Bijaura. Citron.

288/2. Var. LIMONUM F. B. I. i. 515; E. D. C. 1286. C. *medica* F. I. iii. 392 partly.

Cultivated not infrequently.

A small tree. *Beng.* Karna-nimbu. The Lemon.

288/3. Var. ACIDA Brandis; F. B. I. i. 515; E. V. C. *acida* F. I. iii. 390.

Cultivated extensively in numerous forms, the two chief being the *Pati-nimbu*, or "common round Lime" and

the *Kaggi-nimbu*, or " long small Lime "; the latter is especially used.

- 289 r A bU8h* B?n9- Nimbu. The Indian Lime.
- CITRUS AURANTIUM Linn.; F. I. iii. 392; F. B. I. i. 515 ;
K T>. C. 1232.

Cultivated, but only thrives well in the western parts. A snia11 tree. The Bengali name seems to show that the earliest knowledge the natives of Bengal possessed of the Orange was derived from the kingdom of Comilla to the east and not from Upper India. Beng. Kamila-nimbu ;

- 290. e *Him* /, Naran S i, The Orange.
- CITRUS DECU&IANA Linn.; F. I. iii. 393; F. B. I. i. 516;
K D. C. 1263.

Cultivated very largely. A tree< The Bengali name here again indicates pretty clearly that the first knowledge of the fruit in our area was derived from the Malay Islands. Beng. Batavinnbu. The Shaddock.

Order XXXI. SIMARUBEJE.

Trees o shr
pinnate1 r r uk s? bark almost always bitter. Leaves alternate,
deciduo ^ COInpoun^» rarely simple, often very large; stipules
blowers regular, small, 1-sexual or polygamous;
Or lob ea, rarely o- axillary. Disk annular or elongated, simple
vaW ea, rarely o- Sepals united in a 3-5-lobed calyx, lobes
Vaivat - u mibn cate. Petals 3-5, very rarely 0, hypogynous,
Petals e or im bx ca* e* Stamens as many or twice as many as
often, rarely numerous; filaments inserted at base of disk, free,
intror^ th a ba Sa l S Cal c ., anthers 2-celled ; dehiscence longitudinal
SQ ioot> i Cu r i e ^ 8 U 11. ited in a superior, usually deeply lobed rarely
sfci gm ---, 1-6 u celled ovary ; styles 2-5, free or more or less united,
each as Ca p itate > ovules from the inner angle, usually solitary in
u suall o ell lare * y m ore, anatropous with raphe ventral. Fruit
t o j ^ - ^ o i - 2-6 separating indehiscent carpels, occasionally sama-
8 e \ Or dehiscent capsular, sometimes indehiscent drupaceous*.
Sc ant y or 0; embryo straight or curved.
Ue a Ves un equally pinnate ; calyx 5-fid ; ovary deeply lobed ; fruit of 1-5
sam { IIUs 5 a lofty unarmed tree [p. 308].....Ailanthus.

•Leaves 2-foliolate; calyx 5-partite; ovary entire; fruit a 1[^] fleshy, oily, 1-seeded drupe; a small spiny tree [p. 307] ^{lanites.}

148. *Ailanthus* Desf.

Tall trees; *leaves* very large, alternate, ^{m l P a n l n n n a ^ ^} small, polygamous, in terminal or axillary panicles. ^{J ^ i W i e n a} lobes equal, imbricate. *Petals* 5, valvate; disk 10-lobed. ^{f i l ^ o r l o l} in *i* flowers 10, in *?* flowers 2-3; filaments short or ^{^ ^ j} scales 0. *Ovary* 2-5-partite and 2-5-locular; ^{s t y l e ^ ^} ovules solitary in each loculus, semianatropous. ^{* u s . g c e l} single-seeded samaras; wing very large, ^{u s} pendulous; albumen scanty; embryo with leafy cotyle ^{o I . v . 5 1 g}

291. *AILANTHUS EXCELSA* Roxb.; F. I. ii. 450; F. B.

E. D. A. 658.

Behar, rare; Chota Nagpur, common; Orissa.

A tree 60-80 feet high; flowers in lax, ^{n l u c h -} branched panicles. *Hind.* Maharukha, ^{o f t e n k a r ^}

JJriya Mahanim, gormi-kawat.

149. *Balanites* Del.

Shrubs or trees, armed with spines; *leaves* coriaceous, ^{2-foliolate:} leaflets entire. *Flowers* small, green, in axillary cymes. ^{G a l y x} segments 5, imbricate, deciduous. *Petals* 5, imbricate; ^{1 thick,} entire or faintly lobed. *Stamens* 10, inserted outside ^{d i s k ;} filaments filiform. *Ovary* globose, entire, 1-locular; ^h style subulate; stigmas minute, free or united; ovule solitary ^{le short,} *Fruit* a large fleshy oily 1-seeded drupe. *Seed* ^{pendulous.} albumen 0; embryo with thick oblong corrugate or ^{pendulous;} cotyledons. ^{lobed}

292. *BALANITES ROXBURGHII* Planch.; F. B. I. i- ^{m e % o n m v P .}

B. 13. *Ximenia tzyptiaca* F. I. ii. 253.

Behar.

A small spiny tree, 20 feet high; flowers in ^{small} axillary cymes. *Hind.* and *Beng.* Hingan.

Order XXXII. OCHNACEJE.

Trees or shrubs, juice watery. *Leaves* alternate, simple, ^{rarely} pinnately compound; stipules 2, free. *Flowers* regular, ^{rma-} phrodite, bracteate, often showy, in terminal panicles or ^{ubels}

or in axillary
 Or of a n^r Umbels or fascicles, rarely axillary solitary. *Disk* 0,
 4-5, free elongation of torus often enlarged after flowering. *Sepals*
 hypogynous imbricate, persisting. *Petals* 5, rarely 4 or 10, free,
 filaments imbricate deciduous. *Stamens* 4-5 or 8-10 or many ;
 basifixed inserted on the disk when present, persistent; anthers
 deciduous; dehiscence longitudinal lateral or apical
 or 1-locular *Peh* united in a superior ovary, short and 2-locular,
 1-locular with *placentas axial* occasionally
 simple *placentas parietal* or intruded; style subulate acute
 1-2, or many lobed at apex, stigma terminal; ovules in each cell
 pendulous, raphe ventral. *Fruit* indehiscent, drupaceous or berry-
 like, coriaceous Pyrene 1-4-seeded, or a dehiscent 1-5-celled
 septate. *Seeds* solitary or few, less often numerous;
 albumen 0 5 embryo usually straight.

150. Ochna Linn.

Trees or shrubs; leaves alternate, simple, almost always serrate ;
 stipules conspicuous, yellow, bracteate, in panicles or
 umbels. *Petals* 5, subpetaloid, persistent. *Petals* 5-10, deciduous ;
 disk thick lobed. *Stamens* numerous, shorter than the petals;
 filaments short or long, persisting; anthers deciduous. *Ovary*
 deeply 3-lobed, 3-10-locular; styles connate below or through-
 out, stigmas silicles capitellate; ovules solitary in each cell,
 from an acute angle. *Fruit* consisting of 3-10 drupes seated on
 the disk. *Seed* erect; albumen embryo with thick fleshy
 cotyledons.

Leaves finely serrate; flowers 7-15 in. across, in axillary racemes; a tree
 Leaves 1 *squarrosa*.
 downy beneath; flowers 1-35 in. across, umbellate; a
 shrub.

29a - OCHNA SQUAKROSA Linn.; F. I. ii. 643 ; F. B. I. i. 523 ;
 E - D. O. 1.

Orissa.

9Q ^ medium tree. *XJriya Koniari*.

7y4 - OCHNA PUMILA Ham.; F. B. I. i. 524 ; E. D. O. 2.

J3ehar; Chota Nagpur, rather common.

A low shrub. *Santal*. Champa baha.

Order XXXIII. BURSERACEJE.

Trees or shrubs with balsaminous juice. *Leaves* alternate, very rarely opposite, unequally pinnate or 3-foliolate, rarely 1-foliolate 5 stipules, or lowest stipule-like leaflets, foliaceous, or 0. *Flower** regular, hermaphrodite polygamous or subdioecious, small, i¹¹ racemes or panicles. *Disk* usually conspicuous, annular or cupj like, free or adnate to base of calyx. *Sepal** united in a 3-6-lobed often minute calyx ; lobes imbricate or valvate. *Petals* 3-6, free a* rarely connate, imbricate or valvate. *Stamens* as many or twice as many as petals, inserted below or on the disk; filaments equal or not, free rarely connate at the base; anthers versatile, rarely adnate, 2-locular; dehiscence longitudinal lateral. *Carpels* united in a superior 2-5-locular 3-gonous or globose ovary with axial placentas; ovules 2 rarely 1 in each loculus always from in^{*er} angle, usually attached above middle of cell or pendulous collateral, rarely ascending from base, anatropous with raphe ventral. *Fru*t* indehiscent drupaceous with 3-5-pyrenes, rarely dehiscent pseudo-capsular. *Seeds* solitary, pendulous, with membranous testa; albumen 0; embryo with usually membranous complicate rarely with fleshy cotyledons.

Drapes trigonous, valvately dehiscent, pyrenes separating ...**Bosweffl***
drupes globose or ovoid, indehiscent, pyrenes not separating:—

Oalyx 5-fid urceolate, the tube clothed by the disk.....**Garuga-**
Calyx 4-G-lobecl imbricate, disk annular.....**Eurserft.**

151. *Boswellia* Koxb.

Tall trees, with balsaminous juice and papery bark; *leaves* alternate, deciduous, with opposite usually serrate leaflets; stipules 0. *flowers* hermaphrodite, small, white, in axillary racemes or panicles' *Calyx* small, 5-toothed, persistent. *Petals* 5, distinct, narrowed below, imbricate. *Stamens* 10, alternately longer and shorter.inserted at the base of the disk. *Ovary* sessile, 3-locular ; style short, stigma 3-lobed; ovules 2 **pendulous in ea**ch loculus. **fruit** 3-g 01 T dr ^ Containi* g 8 ultimately separating 1-seeded **Control** ^ uL C O m p r e s s e d r e p e n M o u s t a r y ^ 0 ; embryo with contorted multifid cotyledons.

^ I T T SE JT AE0Xb ; P- B. I. i. 328; B.D.B.771.
B. thunfera F. I. ii. 3Q3

Behar; Chota Nagp_{11r}'

A balsamiferous tree. *Vernuc.* Salhe, sali, salcya.

152. GarugaBoxb.

pin^{ces}, With pubescence young branches; leaves alternate, imparipinnate, crowded near ends of branches; leaflets opposite, crumpled; flowers polygamous, in much-branched panicles. 5-7 compound, 5-fid, valvate, lined by the large disk. Petals 2, attached to calyx-tube, induplicate-valvate. Stamens 10, equal, tripartite, attached to calyx-tube at margin of disk; filaments hairy 4-5-locular; style erect, stigma capitate, ovules 2 in each loculus. Fruit a lobose fleshy drupe with 1-3 pyrenes, each 1-seeded. Seed with a membranous testa; albumen 0; embryo with contorted cotyledons.

Garuga PINNATA Roxb.; F. I. ii. 400; F. B. I. i. 528; E. B. G. 143.

ChotaNagpur; Chittagong.

A tree reaching 40 feet in height. Beng. Jinn, tmn, kharpat, nil bhadi; Hind. Ghogar, kaikar; Uriya Mohi Kol. Nia jowa.

153. Bursera Linn.

Trees With balsamiferous Juice Leaves alternate, imparipinnate 6-10 foliolate; stipules 0. Flowers hermaphrodite or polygamous, short branched panicles. Calyx small, 4-6-toothed or 5-toothed; teeth imbricate. Petals 4-6, short, spreading or alternately spreading - usually valvate; disk annular crenulate. Stamens 8-12, equal, inserted at base of disk. Ovary free, ovoid or subglobose, 3-5-locular; style very short, stigma 3-5-lobed; ovules 2 in each loculus. Fruit a globose or ovoid drupe with 3-5 1-seeded pyrenes with a membranous testa; albumen 0; embryo contorted, usually 3-lobed cotyledons.

BURSERA SERRATA Colebr.; F. B. I. i. 530; E. D. B. 941.

Limonia pentagijna F. I. ii. 382.

Chota Nagpur; Orissa; Chittagong.

A balsamiferous tree. Vernac. Chitrika.

Order XXXIY. MELIACE.E.

Trees or shrubs. Leaves alternate, pinnately compound, rarely bipinnate, very rarely simple; leaflets generally oblique at the base; stipules 0. Flowers regular, hermaphrodite or polygamous, usually in axillary panicles. Disk tubular or annular,

BENGAL PLANTS.

free or adnate to the ovary, or obsolete. *Sepals* united in a 3-6-lobed or sometimes entire calyx, rarely free, usually **bud.** *Petals* 3-6, free or rarely connate below, sometimes below to staminal tube, valvate imbricate or contorted. 4-12; filaments connate in a tube or rarely free, inserted at base of the hypogynous disk; anthers erect, usually the tube, 2-celled, included or exserted; dehiscence long introrse. *Carpels* united in a usually superior 3-5-locular style simple, stigma disciform or capitate; ovules rarely collateral or superposed, very rarely solitary, from inner raphe ventral. *Fruit* dehiscent or indehiscent, capsular drupaceous or berry-like. *Seeds* sometimes arillate, sometimes without albumen or with albumen fleshy; embryo flattish.

*Stamens connate in a tube:—[p. 313]

tSeeds not winged:—[p. 313]

Leaflets coarsely serrate, rarely entire; fruit a drupe; seeds fleshy albumen and thin cotyledons; ovules in each cell 1-2: Flower elongated; calyx 5-partite; petals imbricate; disk annular; fruit with a single 1-5-celled stone. Flower globose; calyx 5-toothed; petals valvate; style rather disk cupshaped; fruit containing 5 horny pyrenes.

Leaflets entire; seeds with no albumen and fleshy cotyledons: Ovules 1-2 in each cell; fruit either a capsule or a berry; arillate:—[p. 313]

Fruit a capsule, dehiscence loculicidal:--

Flowers and staminal tube oblong or linear; style long Anthers linear; disk short annular; ovules solitary in cell of the ovary.

Anthers short; disk cylindrical longer than ovary; each cell of the ovary.

Flowers and staminal tube globose or turbinate; style short or 0:—

Anthers included; filaments quite united; petals 3

Anthers exserted; filaments free towards apex; petals

Heynea

• Fruit a berry, indehiscent; petals 5:—

Anthers included; style 0 **Aglaia.**

Anthers exserted; style distinct **Walsura.***

* Usually the only species found within our area) they are free. *Walsura* are connate, in two or three species

- †Ovules 3-8 in each cell ; fruit a large capsule , seeds large thick
tessaro - without wings
Seeds winr! V [p. 312].....Carapa.
- D: Sli Present ; petals spread ; staminal tube wide :—
Petals oblong ; staminal tube urceolate ; disk narrow annular ;
seeds numerous ; wide-winged only at upper end. . . . Swietenia.
- Petal obovate ; staminal tube cupular ; disk rather wide ; seeds
without albumen ; winged at both ends.....Soymida.
- Disk 0. Petals oblong ; suberect ; staminal tube cylindrical ; seeds with-
out albumen ; winged only above.....Chickrassia.
- *Stamens free ; seeds winged ; ovules 8-12 in each cell of ovary:—[p. 312]
Fruit capsular, the valves separating from the axis:~
Petals oblong ; stamens 4-6, with at times alternating stami-
nules ; ovary 5-celled, cells 8-12-ovuled ; seeds with albumen, winged
at both ends only below.....Cedrela.
- Petal ovate ; stamens 10 ; ovary 3-celled, cells 8-ovuled ;
seeds without albumen, with angular margins and winged above
only.....Chloroxylon.
- fruit a b.....Walsura.*
ei>17. indehiscent ; ovary 2-celled.....Walsura.*

154. Melia Linn,

rp
j-i'eeg ;
entire or tripinnately or 2-3-pinnately compound ; leaflets
axillary (often) stellately pubescent ; stipules 0. Flowers
free Panicles* Cah^x short, imbricately 5-6-lobed. • Petals
cylindrical ; imbricate ; disk annular. Stamens united in a
anther 10-12 included or partly exserted, short, attached near
top of style ; included or partly exserted, short, attached near
staminal tube ; style slender nearly as long as
posed a capitate ; ovules in each loculus 2 super-
posed ; style slender nearly as long as
with 1-5-celled stone. Seeds
with 1-5-celled stone ; albumen fleshy but scanty ; embryo
with 2 cotyledons.
Leaves bipinnate ; flowers lilac ; ovary 5-celled ; stone with
1-5-celled stone. Cambers and seeds.....Azedarach.
Leaves simply pinnate ; flowers white ; ovary 3-celled ; stone 1-chambered
and.....Azadmichta.

2⁹⁸ - MKLU AZEDARACH Linn.; F. I. ii. 395 ; F. T. T. i. 544 ;

^ - D. M. 393.

Planted.

* See footnote on opposite page.

BENGAL PLANTS.

A tree. *Beng.* Gora nim, mahanim; *Hind-* deikna. The Persian Lilac.

299. MELIA AZADIRACHTA Linn.; F. I. ii. 394; F. B. I. E. D. M. 363.

Planted and spontaneous in all the provinces.

A tree with dark wood and bitter leaves and bark, and *Hind.* Nú. The Margosa or Neem.

155. Cipadessa Bl.

Shrubs or small trees; *leaves* imparipinnate; leaflets **oppo** nearly so, serrate or entire; stipules 0. *Flowers* subglobo axillary peduncled panicles. *Calyx* small, cupular, *Petals* 5, oblong, rather short, free, spreading, valvate. connate in a deeply 10-lobed tube, adnate below to the disk, lobes linear 2-fid at the tip; anthers 10 short subapic inserted between the lobes. *Ovary* 5-locular, the cells with calyx-lobes; style rather short, stigma clavate-eap ovules in each cell 2, collateral, pendulous. *Fruit* a 5-celled, hardly fleshy drupe. *Seeds* 1-2 in each cell; albumen fleshy; embryo with leafy cotyledons.

300. CIPADESSA FRUTICOSA Bl.; F. B. I. i. 545. *indica* F. I. ii. 392.

Chota Nagpur; Orissa.

A much-branched shrub.

156. Chisocheton Bl.

Trees or shrubs; *leaves* imparipinnate, opposite or suboppos leaflets more or less oblique; stipules 0. *Flowers* polygan numerous, occasionally in spicate racemes, usually in divaricate branched supra-axillary or rarely axillary panicles. *Calyx* am cupular, 4-5-toothed. *Petals* 4-5, rarely 6, connate below, above, valvate or subvalvate. *Stamens* connate in an elongated slender tube 4-8-lobed at the tip, lobes entire or toothed; anthers linear, as many and alternate with the lobes, included slightly exserted; disk short. *Ovary* depressed, 2-4-locular; style filiform usually exceeding the staminal tube, stigma capitate; ovules usually solitary in each loculus. *Fruit* a subglobo 2-4-celled, loculicidally 2-4-valved capsule; valves coriaceous *Seed* usually enclosed in a partial albumen 0; with peltate cotyledons.

Flowers slender petals; leaflets hispid-pubescent on the nerves
staminal tube more or less pubescent on both sides

Flowers small sessile; leaflets quite glabrous; staminal tube glabrous
paniculata.
dysoxylifolius.

301. C HISOCHETON PANICULATUS Hiern; F. B. I. i. 552. Guarea
Paniculata F. I. ii. 242.
Chittagong.

302. c A tree, Vernae. Kalikora.
HISOCHETON DYSOXYLIFOLIUS Kurz; F. B. I. i. 551.
Mttagong.
A tree.

157. Dysoxylum Bl.

rees; legumines pinnae 5 leaflets entire, opposite or alternate,
oblique, Coriaceous; stipules 0. Flowers hermaphrodite, paniced.
oblong, Caducous > subentire or 4-5-toothed or -lobed. Petals 4-5,
in acute, Saccate, adnate, valvate or slightly imbricate. Stamens connate
6 or fewer, with a crenate or dentate apex; anthers short,
longer than included or half-exserted; disk tubular as long as or
as the ovary. Ovary usually 3-4-locular; style as long
cell. # tube, stigma broadly capitate; ovules usually 2 in each
valve, pyriform 1-4-celled loculicidal capsule;
Coriaceous - See with or without an arillus; testa
cylindrical; Acumen 0; embryo with very large superposed or
lateral cotyledons.

Leaves pale, calyx subentire, half as long as corolla; disk
glabrous, pubescent outside; staminal tube mealy outside and
inside. binectariferum.
very dark, calyx small campanulate, irregularly 4-5-toothed, much
tubular than corolla; disk densely hairy at apex and inside; staminal
Quite glabrous. procerum.

303. DYSOXYLUM BINECTARIFERUM Hook, f.; F. B. I. i. 546;
E. D. D. 884. Guarea binectarifera F. I. ii. 240.
Chittagong.

A tree 30-40 feet high. Vernac. Rata.
304. DYSOXYLUM PROCERUM Hiern; F. B. I. i. 547; E. D. D. 889.
Chittagong.
A very tall tree. Vernac. Dingori.

158. *Amoora* Eoxb.

Trees; *leaves* imparipinnate; leaflets oblique, quite coriaceous; stipules 0. *Flowers* polygamous or polygamy cf flowers paniculate, ? spicate or racemose. *Calyx* 3-fid or -partite. *Petalos* 3. *Stamens* connate in a campanulate inconspicuously 6-lobed tube; anthers 6, disk obsolete. *Ovary* short, sessile, 3-locular; stigma 3-locules 1-2-ovuled. *Fruit* a subglobose, coriaceous, loculic 3-valved capsule. *Seeds* with a fleshy bright arillus; testa aceous; albumen 0; embryo with conferruminate cotyledons.

Flowers subsessile spicate; male spikes branched, female 5-partite; fruit 1-5 in. across.

Flowers pedicelled; male in many-fid, branching panicles, few-fid, racemes; calyx 3-lobed or 3-toothed:—

Leaflets alternate or subalternate, not more than 6; fruit obovoid 2-celled, under 1 in. across; racemes much shorter leaves.

Leaflets opposite or subopposite, often as many as 12; fruit subglobose 3-celled, 2-5 in. across; racemes about as long leaves.

305. AMOORA ROHITUKA W. & A.; F. B. I. i. 559; E.D. Andersonia Rohituka F. I. ii. 213.

Chota Nagpur; N. Bengal; Chittagong: also often in the other provinces.

A medium tree with wide-spreading crown. Harin-hara; Beng. Tikta-raj; Kol. Sikru.

306. AMOORA CHITTAGONGA Hiern; F. B. I. i. 559.

Chittagong.

A considerable tree.

307. AMOORA CUCULLATA Roxb.; F. B. I. i. 560; E. D. Andersonia cucullata F. I. ii. 212.

Sundribuns, abundant.

A large tree with numerous vertical blind rootsuckers. Beng. Amúr, latmi.

159. *Heynea* Roxb.

Trees or rarely shrubs; *leave*, imparipinnate; leaflets 5-10 opposite, entire; stipules 0. *Flowers* hermaphrodite, small, in long-peduncled terminal and axillary panicles. *Calyx* short, 4-5-fid,

imbricate. *Fetch* 4-5, oblong, suberect. *anthers* connate in an 8-fid or 10-fid tube, lobes linear 2-toothed at the tip; *anthers* 8 or 10 attached between the lobes; *disk* 1-locular. *ovary* sunk in the disk, 2-3-locular, narrowed upwards into a short style; *stigma* 2-3-toothed with a thickened base, *ovules*, 2 in each loculus. *Fruit* a 1-celled 2-valved capsule. *Seed* solitary, with a thin white *albumen* 0; *embryo* with 2 spherical cotyledons.

8. HBYNBA TRIJUGA Roxb.; V. I. ii. 890; I. B. I. i. 565.

Chota Nagpur; Tirhut.

A considerable tree. *Vernac.* Kapia kushi, chenenji.

160. *Aglaia* Lour.

rees or shrubs; *leaves* pinnate or 3-foliolate; leaflets entire; Pubescence often lepidote or stellate; stipules 0. *Flowers* pedicels, minute or small, subsessile, in dense or lax panicles. *M* 5-lobed; lobes imbricate. *Petals* 5, short, concave, imbricate, filament connate in an urceolate or subglobose tube, 5-toothed or ? at the apex; *anthers* 5, erect, included or half-exserted.; *stigma* obscure. *Ov*, subovoid, 1-3-locular; *style* very short, *stigma* simple or lobed, clavate or capitate; *ovules* 2 or 1 in each cell. *Fruit* indehiscent, berry-like, 1-2-celled and 1-2-seeded with a fleshy testa; *albumen* 0; *embryo* with fleshy cotyledons.

Leaflets usually 5, rarely 7 or 3, pale green *Roxburghiana*.
 Leaflets 11-13, bright green *perviridis*.

9. AGLAIA KOXBURGHIANA Miq.; F. B. I. i. 555 ; E. D. A. 644.

Chota Nagpur ; W. Bengal, Midnapur ; Orissa.

A medium tree. *Vernac.* Priyangu.

10- AGLAIA PERVIRIDIS Hiern ; F. B. I. i. 556.

Chittagong.

A medium tree.

161. *Walsura* Roxb.

Trees; *leaves* imparipinnate, sometimes 1-foliolate ; leaflets opposite, quite entire; stipules 0. *Flowers* small, *panicles* axillary and terminal panicles. *Calyx* short, 5-fid or 5-lobed imbricate. *Petals* 5, oblong, spreading, slightly imbricate. *Stamens* 8 or 10, free linear or subulate, obovate.

in a tube; anthers terminal or inserted in a ^{not} ¹ ^{at the apex of} ^{the filament;} disk usually annular. Oim ^{7/} ^{2-3-locular.} sunk in the disk; style short, stigma turbin ^{te,} ^{V3-toothed;} ovules 2 in each loculus. *Fruit* indehiscent ^{Der J ^ y au >} 2-celled, and 1-2-seeded. *Seed* enclosed in [»] albumen 0; embryo with thick cotyledons. ^{↑. j. i. 565;}

811. WALSUBA ROBUSTA Roxb.; F. I. « *580,

E. D. W. 19.

Chittagong.

A large timber tree. *Vernor.* Upphmg-

162. Carapa Aubl.

Trees, always littoral; *leaves* equally ^{Pinnat 6 ^ / o ^ r « herma-} sometimes 8-jugate, opposite, entire; stipules 0. ^{fid p ^ tr ^ s 4} phrodite, in lax axillary panicles. *Calyx* short, ⁴ ^{o-loose tll b ^} reflexed, contorted. *Stamens* connate in a ^{sub ^ ^ tei-n ^} 8-toothed at the apex; the teeth 2-partite; anthers ^{^ ^ o vary.} with the teeth, included; disk cupular, adnate to ^{-a-} ^{coid;} *Ovary* 4-grooved, 4-locular; style short, stigma ^{dis ^ 12-seca ea} 2-8 in each ^{ll&ulus.} *Fruit* a very large ^{S. lobo S ®} cajfeule, the 4 coriaceous valves opening opposite ^{the ololiterated} dissepiments. *Seeds* large, thick, compressed, irregu ^{l rly angular;} testa hard; arillus 0; albumen 0; embryo with ^{nygdaloid} cotyledons. ^{^ n ^ i. 567}

312. CARAPA OBOVATA Bl. *Carapa moluccensis* r • £' ^ . u . 240.

in part; E. D. C. 482. *Xylocar₂nis Granatinn*

Sundribuns, common.

A small tree, with a large spherical fruit. *Bcn < h*

poohar.

163. Swietenia Linn.

Lofty trees; *leaves* even - pinnate; leaflets opposite, ^{decidu^{ous};} stipules 0. *Flowers* hermaphrodite, small, in axillary ^{nd ^ 5,} *Pet* ^{toothed} terminal panicles. *Calyx* small, 5-fid, lobes imbricate. ^{10. ^ ^,} spreading, contorted. *Stamens* connate in an urceolate ^{tl * J ^ ^,} tube; anthers 10, apiculate, attached between the tee ^{tig^{mft}} annular. *Ovary* sessile, ovoid, 5-locular; style ^{shor} discoid, 5-lobed; ovules in each loculus numerous, on ^{the ^ ^} angle. *Fruit* a 5-locular capsule septifragally dehiscent ^{f o ^} base, the 5 valves 2-lamellate, the outer thickly the inner ^{thin}

wood, separating from the siibpcaistent 5-angled woody axis. Seeds numerous, pendulous, 2-seriate, with compressed bodies below; long wide imbricating wings above; albumen fleshy; embryo transverse.

leaflets 1-5 in. long or less; capsule 4 in. long or less. MtiJnuiom.

Leaflets 3 in. long or more; capsule 7 in. long or longer. ...niaerophylli.

SWIETENIA MAHAGONI Linn.; F. B. r. ip 540.

Planted generally.

A very large tree; flowers freely but fruits very sparingly. Native of W. Indies and Honduras. Vernac. Mahagni

314 q Wfom the English name). The Mahogany.

• kWIETENIA MACROPHYLLA King.

. Hanted very generally.

A- medium tree; flowers and fruits very freely. Native of Honduras. Vernac. Bara mahagni.

164. Soymida A. Juss.

Lofty tree, leaves even-pinnate; leaflets opposite, entire, obtuse, stipules 0. Flowers small, in axillary and terminal panicles. Sepals 5, free, short, imbricate. Petals 5, spreading, clawed, imbricate. Stamens connate in a short cupular tube, cleft at the apex; the lobes 2-toothed; anthers 10, inserted between the teeth; disk flat. Ovary 5-locular; style short, stigma broad fleshy; ovules pendulous, 2-seriate, about 12 in each loculus. Fruit a 5-valved, woody, septifragal capsule; valves flattened, separating from the 5-winged axis. Seeds numerous, foliaceous, winged at both ends; albumen fleshy; embryo with 2 cotyledons.

SOYMIDA FEBRIFUGA A. Juss.; F. B. I. i. 567; E. D. S. 2501.

Swietenia febrifuga F. I. ii. 398.

Chota Nagpur, common.

A large timber tree. Vernac. Rohun.

165. Chickrassia A. Juss.

Lofty tree, leaves even-pinnate; leaflets subopposite, entire, uninate, *oblique; stipules 0. Flowers hermaphrodite, in terminal panicles. Calyx short, 5-toothed. Petals 5, oblong, contorted, suberect. Stamens connate in a cylindrical tube, crenate at the apex; anthers 10, attached within the

crenatures; disk obsolete. Ovary shortly stipitate, 5-locular; style stout, stigma capitate; ovules many, 2-^{u s} in each locus. Fruit a 3-celled, septicidally 3-valved ^{c a p s} valves 2-lamellate, separating from the 3-winged axis. Seeds flattened, winged at the lower end; albumen 0; embryo ^{vi} orbicular cotyledons.

816. CHICKRASSIA TABULARIS A. Juss.; F. B. I. i. & ⁶⁸ E. C. 1021. *Swietenia CUcl-rassia* F. I. ii. 399.

Tippera; Chittagong.

A tall timber tree. Beng. Chikrass, pabba, dal*»

Chittagong-wood.

166. Cedrela Linn.

Lofty trees; fe[^]simparipinnate; leaflets many-jugate, opposite or subopposite, entire or serrate; stipules 0. Flowers white, terminal or subterminal panicles. Calyx short, 5-fid. Petals oval, suberect, free, imbricate. Stamens 4-6, usually 5, free, on a 4-6-lobed raised disk, sometimes with alternating filaments subulate; anthers versatile. Ovary sessile on the 5-locular; stipe filiform, stigma discoid; cells with each pendulous, 2-seriate ovules. Fruit a coriaceous 5-celled, fragally 5-valved capsule; valves each 2-lamellate. Seeds pressed, winged below or at both ends; albumen fleshy; embryo with flat, subfoliaceous cotyledons.

Leaves usually 7-jugately pinnate; panicles glabrous; sepals acute; capsule subglobose; valves woody; seeds evenly winged at ends

Leaves usually 9-jugately pinnate, petiole long; panicles puberulous; sepals orbicular; capsule ellipsoid, valves thin; seeds acute-winged below, with a longer obtuse wing above. *nticroruri**

317. CEDRELA TOONA Roxb.; F. I. i. 685 • F. B. I. i. 568; E. D. C. 838.

Fairly general, though in the central parts only a planted species.

A tall timber tree. Hind, and Beng. Tūn; Uriya Maha limbu; Kol. Kahangai.

318. CEDRELA MICROCARPA C. DC.

Chittagong; Tippera.

A tall timber tree. Vernac. Tūn; kujya.

167. Chloroxylon DC.

Medium trees; leaves even-pinnate; leaflets obtuse, oWigue, icles.
 <*Kre. Flowers small, in axillary and terminal p u b « *? " nrica te >
 c «k* deeply 5-lobed. Petalc 5, spreading, clawed, k 10-lob ^
 S'tniien. 10, free, inserted between the lobes of the tmc ^ longer; ^
 Pubescent disk; filaments subulate, alternately shorter, alia ^
 others versatile. Orarj pubescent, sunk in the msi > .
 *« 3-locular; style short slender glabrous, stigma capitate.
 °v<les about 8, 2-seriate in each cell. Fruit a leathery-, 8-eeUJ
 loculicidally 3-valved capsule. Seeds compressed with angw .
 "»-»»», winged above; albumen 0; embryo with tmcK
 COtyledons.

- n C. 1031.

319. CHLOROXYLON SWIBTENIA DC; F. B. I. i. 569; E. D.

Swietenia Chloroxylon F. I. U- 40G1

ChotaNagpur.

girya; Kol.

A medium to large tree. Vernac. Behru,

Sengel sali. Indian Satin-Wood.

Order XXXV. CHAILLETIACEJE.

Trees or shrubs. Leaves alternate, entire, simple; stipules
 2- deoiauous. Flowers regular or irregular, 1-sex ual or polygamous,
 ^ rely hermaphrodite, in corymbose < ^ | V eia B ** J ? , m e t i m e s
 • ^ nate to petiole. Disk o! 5 glands or scales, or cupu U
 glands or lobes. Sqmlx >, free or connate, s > o m e t i m e s u n e q u a l,
 " " t r i c a t e . f t a / . 5, free, subporigynous, equal or u n e q u a i , . o f a c e
 * 2-H blade often with an inrtexed plate adnatc, t e ^ t s s o m e
 u s u a % o p e n i n b u d . « * « « - . ^ ^ ^ r ^ I o n ! c o n -
 f e r t i j c ; filaments free or adnate to petals, anthers l i n a l , i n t r o r s e .
 n e c t r i v e o f t e n t h i c k e n e d b e h i n d ; d e h i s c e n c o < " " « * » <
 C a r p e l s o o n a a t e a s a s u p e r i o r 2 - 3 - l o c u l a r p u b e s c e n t o v a r y ; s t y l e s
 1 - 3 , f e e o r m o r e o r l e w . c o n n a t e , s t i g m a s s m ^ p l e c a p i t a t e ;
 o v t d e s i n c o l l a t e r a l p a i r s , p e n d u l o u s f r o m a p e x o t e a c h l o c u l u s ,
 : n a t r o p o u s w i t h r a p h e v e n t r a l . F r u i t V * h ^ > d r u p a c e o u s ,
 " W o n g o r c o m p r e s s e d o r d i d y u i o u s ; e p i c a r p s o m e t i m e s d e h i s c e n t ;
 s t o n e u s u a l l y i n d e h i s c e n t 1 - 3 - c h a m b e r e d , c h a m b e r s i - s e c e d e d . ^ e d s
 P e n d u l o u s , w i t h m e m b r a n o u s t e s t a a n d b r o a d m l u u i , a l b u m ^ 0 ;
 f e m b r y l a r g u w i t h t h i c k c o t y l e d o n s .

168. Chailletia DC. .

Trees or shrubs; *leave*, alternate, entire ; stipules 2, deciduous. **lower*, small, polygamo-monocious, in corymbose cymes. *sep*» 5, unequal, obtuse, connate at least at the base. *P***^b] 2-lobed, narrow, free, *DM* of 5 ~~quadrate~~ antipetalous «*ues*» *Stamens* 5, sometimes slightly adnate at the base to the *petals*. ^ov 7_f Jocular; styles 2-3, subconnate or free, «*fr*»^c capitate; ovules in each cell 2, pendulous from the top. &»** 2-celled subdidymous drupe with a 2-celled stone, or 1-celled with * 1-celled stone. *Seeds* solitary in each cell, pendulous; ***» membranous; albumen 0; embryo with thick cotyledons.

^0. CHAILLETIA GELONIOIDES Hook, f.; F. B. I. * 770.

Moacurra gelonioides F. I. ii. 70.

Chittagong.

A small tree. *Beng.* Moacurra.

Order XXXYI. OLACINEJE.

Trees or shrubs, rarely herbs, sometimes climbing. *W*°* alternate, rarely opposite, simple or lobed, penni- or pahnin^{^6*} stipules 0. *Flowers* regular, hermaphrodite, or 1-sexual often dioecious, cymose. *Disk* hypogynous, or cupular perigyn^{oub}, or epigynous. *Sepal** 4-5, usually small, connate in a toothed calyx or free, sometimes accrescent, sometimes adnate to ovarj or fruit, valvate or imbricate. *Petals* 3-6, free or more or less connate, valvate or imbricate. *Stamens* 3-15; filaments inserted with the petals, free or adnate to them and either opposite to oi alternate with them, all fertile or some without anthers, or connate; anthers erect, 2-celled; dehiscence longitudinal intrors^c. *Carpels* united in a free or half-superior 1 Jocular or imperfect^v 2-0¹ocular ovary, or carpel solitary; style simple or 0, rarely divided, stigma entire or lobed; ovules 1-5, pendulous from the apex of a central placenta or from the side or top of the loculu* umcle often dilated. *Fruit* drupaceous or dry, indehiscent, 1-celled' 1-seeded, free or more or less adnate to calyx-tube and disk. *Seed* pendulous; albumen fleshy, entire or lobed, or 0; embryo straight, cotyledons leafy, rarely fleshy.

Flowers 2-eexunl; ovules 1 to each cell :- [p. 323]

Ovary somewhat 3-celled below, Lulled above ; ovules 3, pendulous I

fertil ^o stame ns a ~5» opposite edges of petals, staminodes 5-6 opposite
their ^{CentleS; fLOWers 2-}chlamydeous.....**Olax.**

Ovary ^{X" Celled} throughout; ovule solitary; fertile stamens isomerous
with [^] and opposite to petals or perianth-lobes :—

^{owers 2-}chlamydeous; fertile stamens 5 opposite the petals,
staminodes 5, ^{oVUle} pendulous **Pilia**

Flow ^{WeiS 11lonocnlam} ydeous; fertile stamens opposite perianth-
lobes :—

StaminodeB 0 ; ovule pendulous ; bracts conspicuous

Lepionurus.

*Plowe ^{Staminodes 5} ovule erect; bracts small.....".... **Cansjera.**

Fern* ^{1"SeXUal" ovai v} 1-elled, ovules 2 pendulous :—[p. 322J

^{the stam}ens opposite the petals ; stigma sessile ; flowers cymose

Fertile e+ **lodes.**

^{F - e stai}ens alternate with the petals ; styles short :—

^{owers ra}owers capitate ; stigma dilated, cupular..... **Miquelia.**

* ^{owers ra} cernose ; stigma capitate..... **Natsiatum.**

169. Olax Linn.

Trees ^{Ol*} shr ^{uAs, or} ten climbing, sometimes armed; leaves
alt ^{an t} ^{aG, siln P^e} petioled ; stipules 0. *Flowers* in axillary racemes
or ^{pan} ^{v. lcAes} minutely bracteate. *Calyx* minute, cupular, truncate
son ^{of} ^{Ure*} toothed, accrescent. *Petals* hypogynous, valvate,
co ^{le what} connate, usually 6 connate in 3 pairs, or 5 with 4
fertil ^{an(i 1 free, rarely 5 or 3 aU free-} *Stamens* usually 3
.. ^e» opposite and attached to edges of petals, alternate with
to pairs of usually 6 2-fid staminodes that are opposite and attached
all ^{to} centre of petals, sometimes 4 or 5 fertile, and then occasion-
only one or two opposite centre of petals, staminodes sometimes
free ^{y 5 ; anthers" oblong 2-celled ; dehiscence longitudinal. Ovary}
im ^J its base usually surrounded by a shallow hypogynous disk,
1 ^{perfectly 3-locular (three partial dissepiments below, always}
u ^{u"ocula} r above) ; style simple, terminal, stigma 3-lobed ; ovules 3,
linear, ^{pendulous} from the tip of a central placenta. *Fruit* a
small ^{drupe, more or less covered by the accrescent fleshy calyx;}
A ^{bone cr}u*taceous, 1-celled, 1-seeded. *Seed* inverted; albumen
-eshy ; embryo minute, apical.

S ^t prubs, usually scandent, with woody twigs ; flowers in racemes :—[p. 324]

+Branches terete ; racemes many-flowered :—[p. 324]

Prickly ; bracts minute, shorter than peduncles..... *scantier.*

Unarmed ; bracts large, imbricate, enveloping flowers...!... *hnbricata.*

{Branches angular, unarmed; racemes few-flowered [p. 32<0J acuminata. XIloweiS
 tUndeishrubs, with short erect stocks and herbaceous branches, nan ^
 solitary [p. 323].....

321. OLAX SCANDENS Roxb.; F. I. i. 163; F. B. I. i. 57< ;
 E. D. O. 127.

Behar; ChotaNagpur; Chittagong. -nhexiia¹ ^
 A large climber, almost tree-like. Hind. ~ g ^ j ;
 Beng. Koko-aru; Uriya Bodo-bodoria; Santal-
 Kol. Rimmel.

322. OLAX IMBRICATA Roxb.; F. I. i. 164; F. B. I. i. 575<
 Chittagong.

A large climber, almost tree-like.

323. OLAX ACUMINATA Wall.; F. B. 1.1 576.

E. Bengal, Dacca; Tippera, Comilla.

A climber, or shrub.

324. OLAX NANA Wall.; F. B. I. i. 576; E. D. O. 125.

X. Bengal; Chota Nagpur. .hoots.

A small shrub with woody base and herbaceous si
 Santal. Merom met.

170. *Opilia* Roxb.

Low trees or climbing shrubs; leaves alternate, distic^{houf} ^
 simple, entire, 1-nerved, short-petioled; stipules 0. *l^{lower}
 many, in axillary racemes of umbel-like cymes; bracts decida^{ous}.
 Calyx minute annular, obscurely 5-toothed. Petals 5. &t^{clv} tens
 5 fertile; free, opposite the petals and alternate with 5 thick fl^e ^ hy
 disk-glands or staminodes. Ovary free, sessile, 1-locular; \$^{le}
 short, stigma minute; ovule solitary, pendulous. Fruit an
 indehiscent drupe; pericarp thin, fleshy; stone crustaeou^s.
 Seed inverted; albumen' fleshy; embryo apical or axial.

325. OPILIA AMENTACEA Roxb.; F. I. ii. 87; F. B. I. i. 583.

Behar; W. Bengal; Orissa.

A shrub or small weak-branched tree. Beng. Balikonia.

171. *Lepionurus* 131.

Small trees; leaves alternate, shortly petioled, simple, 1-nerved;
 stipules 0. Flowers Innochlaiiiydeous, numerous, closely set in 3-
 chotornous umbel-like cymes disposed in fascicled axillary racemes,
 each cyme subtended by an ovate bract. Perianth urceolate,
 limb 4-partite; lobes valvate. Stamens 4, opposite the perianth-

lobes; disk ^{disk} ^{sh} ^{all} ^{i.} ^{nmg} the base of perianth-tube. Ovary free, 5 stigma sessile, 4-lobed; ovule solitary, crustaceous stone. Seed pendulous; axial, cotyledons 3.

• AKPIONURUS SYLVESTRIS Bl. *L. oblongifolius* F. 13. I. 583.

Chittagong.

A small tree.

172. *Cansjera* A. Juss.

^g ^{hrubs} ^{climbin} ^g occasionally armed; leaves alternate, shortly petioled 1 ^{nerved} » stipules 0. Flowers monochlamydeous, hermaphrodite, dense bracted axillary spikes. Perianth regular, 4-5-partite, marcescent; lobes valvate. Stamens usually 4 fertile, opposite perianth-lobes and alternate with 4-5 hypogynous ^{fcami} nodes or disk-glands; filaments free or adnate at the style ^{on the} disk. Ovary superior, ovoid-oonical, 1-locular; stigma capitate 4-lobed; ovule solitary, pendulous. Fruit ^{a drupe} surrounded by the marcescent perianth; albumen ^{bo} & ^{ed} solitary, inverted, subglobose; albumen apical, cotyledons 2-3.

327. UNSJERA KHEEDEI Gmel.; F. B. I. i. 582. *C. acandens* P. I. i. 441.

Behar, Monghyr Hills.

«A climbing shrub.

173. *lodes* Bl.

^g ^{hrub} ^S ^{Usila} ^y climbing; leaves opposite or subalternate, petioled 1 ^{Simple} » i-nerved; stipules 0. Flowers dioecious, dimorphic, in axillary or extra-axillary cymes, the lower peduncles ^{stei} ^{ile} and metamorphosed into tendrils. Calyx minute, 5-toothed. Petals connate, 3-5-partite; lobes valvate. Stamens 3-5, opposite the corolla-lobes; anthers rudimentary. Ovary rudimentary. Calyx minute, 4-toothed. Petals connate in a tube often dilated below, Stamens or staminodes 0. Ovary subsessile, 1-locular; fruit sessile, discoid, 5-lobed; ovules 2, collateral, pendulous; the ^{111UCh} dilated* Fruit a drupe > surrounded at the base by persistent, unaltered calyx; stone crustaceous, 1-seeded. Fruit pendulous; testa thin; albumen fleshy; embryo with leafy cotyledons.

#28. *IODES HOOKERIANA* Baill.; F. B. I. i. 596.

Chittagong.

A climbing shrub.

174. *Miquelia* Meissn.

Shrubs, climbing; wood with large vessels; *leaves* altern[^] petiolate, palminerved, simple, membranous; stipules 0. *F^{lotvC}* dioecious, subcapitate; peduncles extra-axillary. 3 Peduncle⁸ racemose. *Calyx* minute, 4-5-fid. *Petals* connate below *^a long pedicel-like occluded tube, limb 4-5-lobed; lobes valvate, *P*^{*} inflexed. *Stamens* 4-5, alternate with corolla-lobes; filamen^{ts} short; anthers introrse. *Ovary* 0. ? Peduncles solitary. ^\ minute, 4-5-fid. *Petals* 4-5, free or only faintly connate below, »⁻ length reflexed. *Staminodes* 4-5, alternate with corolla-lobes oi 0. *Ovary* sessile, 1-locular; style short, stigma dilated, cup^{ulal} ovules 2, pendulous from the apex of the loculus. *Fruit* an oblong-somewhat compressed drupe, its base surrounded by the persistent unaltered calyx; stone crustaceous, rugose, 1-seeded. *Seed* *V^{eil}* dulous; albumen fleshy; embryo with thick leafy cotyledons-

329. *MIQUELIA GIBBA* Baill.; 1\ B. I. i. 594.

W. Bengal.

A climbing shrub.

175. *Natsiatum* Ham.

Herbs, hardly shrubs, climbing; wood porous, medullary rays inconspicuous; *leaves* alternate, petiolate, repand, simple, palmately nerved; stipules 0. *Flowers* dioecious, dichlamydeous, in extra-axillary racemes. *Calyx* deeply 5-partite, persistent. *Petal**^o, free or connate at the base. , *Stamens* 5, fertile, alternate with the petals and also with 5 antipetalous staminodes external to the antheriferous filaments; anthers erect, apiculate, 2-celled. *O#*9* rudimentary. * *Stamdnodes* 4-6, hypogynous, alternate with as many oompweaed glands. *Ovary* Uocular, sessile, villous; styl^e short, 2-3-fid above with capitate stigmas; ovules % collateral, pendulous. **rm*^t an obliquely ovoid compressed drupe; stone crustaceous, 1-celled. *Seed* solitary; .albuLn fleshy; embryo with leafy cotyledons.

330. *NATSUTUM HEKPETICDM* H a m . ; p . B . L j . 5 9 5 .

N.Bengal; E. Bengal; Chittagong.

A ohmbing shrub.

Order XXXVII. ILICINEJE.

Shrub or trees; *Leaves* alternate, simple, usually coriaceous and evergreen; *Stipules* minute, or 0. *Flowers* regular, small, usually 1-sexual; *Disc* perfect or imperfect; *Stamens* in axillary cymes fascicles or small umbels. *Pistils* united in a 3-6-partite or -lobed calyx; segments imbricate. *Pistils* 4-5, rarely 6-8, connate below in both sexes or deciduous, imbricate. *Stamens* 4-5, adhering to the imperfect stamens sometimes free. *Stamens* subulate; anthers versatile; dehiscence longitudinal. *Carpels* connate as a free 3-16-locular ovary; *Style* rarely long, stigma capitate or discoid; ovules collateral in each loculus, pendulous, with raphe dorsal and funicle of ten cupular. *Fruit* a drupe with 2 or more free rarely connate stones. *Seed* with a membranous testa; albumen fleshy 5 embryo minute.

176. *Ilex* Linn.

Shrub or trees; *Leaves* alternate, usually coriaceous and evergreen; *Stipules* minute or 0. *Flowers* small, in cymes fascicles or umbellules, dioecious or polygamous; *Disc* 4-lobed or -partite; lobes imbricate. *Pistils* free or connate at the base in a rotate corolla. *Stamens* 4-5, connate to base of corolla. *Ovary* rudimentary. *Stamens* 4-5, connate to corolla or free hypogynous. *Ovary* 2-12-celled; *Style* 0 or very short; *Stigma* free or confluent on the apex of the ovary. *Seeds* globose, rarely ovoid, drupe with 2-16 stones. *Seeds* pendulous; testa membranous; albumen fleshy; embryo in fruit.

- ILEX GODAJAM Colebr.; F. B. I. i. 604; E. D. I. 17.

Chittagong; N. Bengal, Duars.

A tree with pale ashy bark; leaves deciduous.

Order XXXVIII. CELASTRINEAE.

Trees or erect or climbing shrubs, branches sometimes spinous. *Leaves* opposite, less often alternate, simple; stipules caducous or 0. *Flowers* regular, hermaphrodite or polygamous, small, usually cymose. *Disc* generally conspicuous, flat or tumid, lobed

or entire, rarely 0. *Sepals* united in a small persistent calyx with imbricate segments. *Petals* 4-5, rarely 0, inserted below the disk or on its margin, imbricate. *Stamens* 2; filaments free, subulate or flattened, usually short; anthers longi-ovary, 2-locular, or sometimes subcontiguous at apex; dehiscence longitudinal lateral. *Carpels* united as a sessile, 3-5-locular free or confluent with disk at the base; style short or 0, stigma 2, 3-lobed, rarely 3-partite; ovules 2 in each cell, anatropous, rarely 1 or 2 and pendulous with raphe dorsal. *Fruit* capsular, berry-like, drupaceous or samaroid. *Seed* arillate, sometimes winged; albumen fleshy or 0; embryo large with leafy cotyledons.

Stamens 4-5, rarely more, attached to margin or below margin of disk, filaments usually incurved; seed albuminous:—

Leaves opposite:—

Fruit indehiscent; seeds without arillus..... **Elseodendron**

Fruit dehiscent; seeds arillate..... **Lophopetalum**

Leaves alternate; fruits dehiscent:—

Climbers; flowers in terminal panicles; fruits subglobose..... **Celastrum**

Erect shrubs or trees:—

Shrubs with armed branches; flowers oymose; fruits globose..... **Gymnosoria**

Unarmed trees; flowers spicate; fruits narrowly oblong..... **Kurrimia**

Stamens usually 3, attached to face of disk, always recurved, without albumen; leaves opposite:—

Fruit indehiscent, globose; seeds not winged..... **Salacia**

Fruit dehiscent, flattened; seeds winged..... **Hippocratea**

177. Elaeodendron Jicq.

Trees or shrubs; leaves opposite or subopposite, crenate or crenate; stipules minute, scale-like. *Flowers* polygamous or hermaphrodite, in axillary dichotomous cymes. *Calyx* 5-lobed. *Petals* 5, spreading; disk large. *Stamens* 5; anthers subglobose. *Ovary* adnate to disk, conical, 2-, 4-, or 5-locular; style short; ovules 2 in each locule. *Fruit* indehiscent, dry or succulent, 1-2-celled; cells 1-, rarely 2-seeded. *Seed* with membranous testa and no aril; albumen fleshy; embryo with flat cotyledons.

332t EL^ODENDRON GLAUCUM Pers.; F. I. i. 638; F. B. I. i. 6123; E. D. R. 73.

Chota Nagpur; W. Bengal.

A tree. Kol, Miri, thanki; Santal. Neuri.

178. Lophopetalum Wight.

Tre 0 p? S or s J r u b s 5 fetfw* opposite or alternate, petioled; stipules
 Cah t o Wer S herma p r o d i t e > of t e n rather large, in axillary cymes,
 tin f* S h o r l y / 5 n l o b e c l > l o b e s obtuse. Pefofo 5, p e r s i s t e n t, con-
 cre s t ^ W i ^ l e * a i g e e n t i r e o r ^ o b e d disk, the upper surface often
 Ovar lamellate or villous. Stamens 5, inserted on the disk.
 3-4. 1 ^ S m a l l, S U n k ^ n a n ^ a < ^ n a ^ e ^ o t n e ^ i ^ s ^ t r i g o n o u s o r p y r a m i d a l,
 2- s e r i c u i a r, narrowed into a short style; stigma capitate; ovules
 a n o l a t e, 4 o j: m o r e j n e & Q h l o c u l u s. Fruit a coriaceous 3-4-
 w o e e l a n d 3-4- c e l l e d l o c u l i c i d a l c a p s u l e. Seeds few, occasionally
 ^ S d a r i l l a f e e J a l b u m e n f l e s h y; embryo small.

--3< LOPHOPE TALUM FIMBIUATUM Wight; F. B. I. i. 615.

Chittagong.

A tree.

179. Celastrus Linn.

Shrub s >> climbing; leaves alternate, entire or crenulate; stipules
 min u t d e c i d u o u s, o r 0. F l o w e r s p o l y g a m o u s, i n t e r m i n a l o r
 axill d i k t ^ r a C e m e s o r p a n i c l e s. Calyx 5-cleft. Petal* 5, spreading;
 0 S * 1 ^ e; concave. Stamens 5, inserted on edge of disk. Ovar//
 ^ n t h e t i i s k? 2-4-locular; style short entire with stigma 3-lobed,
 r 3 . n d w i t h r e c u r v e d s e g m e n t s a n d s u b c a p i t a t e s t i g m a s; ovules
 2 . u i e a c h l o c u l u s, e r e c t. Fruit a globose or ovoid, 1-3-celled,
 1 o - s e e d e d c a p s u l e. Seed with a large fleshy arillus; albumen
 f e s n y; embryo with leafy cotyledons.

SH' CKLASTRUS PANICULATA^Willd.; F. I. i. 621; F. B. I. i. 617; E. D. o. 854. C. nntans F. I. i. 623. C. muUiflora F. I. i. 622.

Behar; Chota Nagpur; N. Bengal.

A scandent shrub. Hind. Mal-kungi; Beng. Mal-kangni; Santal. Kujari.

180. Gymnosporia W. & A.

Shrubs or small trees with often spinescent branches; leaves alternate; stipules 0. Flowers hermaphrodite, in small dichotomous cymes. Calyx 4-5-cleft. Petals 4-5, spreading; disk broad, lobed

Gymnosporia

or sinuate. *Stamens* 4-5, attached below the disk. *Ovary* wide-based, on or partially sunk in the disk, 2-3-locular; *style* short, stigma 2-3-lobed; ovules 2 in each loculus. *Frwt** an obovoid or subglobose capsule, 2-3-celled; cells 1-2-seeded. *Seeds* without arillua; albumen fleshy; embryo with leafy cotyledons.

Branches stoutish, zigzag; leaves entire, obovate-cuneate; flower on spines and in leaf-axils; fruit turbinate, 2-5 in. long. Branches rather slender, almost straight; leaves crenulate, cymes on spines or in-leaf axils, many times divided; 15 in. long.

335. GYMNOSPORA EMARGINATA Both; F. B. I. i. 621; E. D.

C. 852. *Celastrus emarginata* F. T. i. 620.

Orissa, Khurda.

* A shrub.

336. GYMNOSPORA MONTANA Laws.; F. B. I. i. 621. *Celastrus*

montana F. I. i. 620.

Chota Nagpur, Parasnath.

A shrub.

181. *Kurrimia* Wall.

Trees; leaves opposite, rarely alternate, clustered or clustered towards ends of branches, coriaceous, entire, stipules deciduous, at first clothing the ends of the branches. Flowers in racemes or panicles. Calyx 5-lobed, recurved. Petals 5, inserted below margin of disk, spreading; disk 5-lobed, fleshy. Stamens 5, inserted below disk. Ovary free, with an apical tuft of hairs, 2-locular; style filiform, twisted in bud, stigmas small capitate; ovules 2 in each loculus. Fruit an entire or 2-lobed capsule, 1-2-celled, tardily dehiscent by two valves. Seeds 1-2, erect, more or less covered by an arillus; albumen fleshy; embryo with linear-oblong cotyledons.

337. KURRIMIA PDLCHERRIMA Wall.; F. B. I. i. 622. *Celastrus*

robusta F. I. i. 626.

Chittagong.

A tree. Vernac. Shilkoil.

182. *Salacia* Linn.

Small trees, or climbing or sarmentose shrubs; leaves opposite, petiolate; stipules 0, Calyx 5-partite, small. Petals 5, imbricate.

^ e; disk thick, broad or conical, lobert. *Stamens* usually 8,
 fiW² or 4, illsertecl on the top of the **disk** close to the ovary ;
 nmu snts recurved. *Ovary* conical, sunk in the disk, 3-locular ;
 style⁷ short, stigma capitate or **3-lobed**; ovules 2-seriate, 2-8
 each cell. *Fruit indehiscent*, berry-like, fleshy or **firmly**
 leathery. *Seed** 1-4 m each cell, angular ; testa firm ; albumen
 0; e- **uabryo** with large usually corrugated cotyledons.

Fl⁰ *Wers* few, 3-6 from each tubercle, almost all axillary, pedicels uncl^r
 m. long :—

Lⁱaves obtusely acuminate, distinctly **serrate** ; **branches** smooth ; **fruit**
 l-celle^, 1-seeded, not **exceeding 1 in.** across; sepal* **nuberulous**
 piinoide*.

I¹aves caudate-acuminate, entire; branches with wrinkled bark;
nut 2-3-celled, ^-seeded, 1-75-2 in. across; sepals glabrous
 Roxburgh^,

Fl¹ *owek* many from each tubercle (6) tubercles almost all extra-axillary
 ^ *icels* over 2, in long leaves bluntly acuminate or obtuse, **hard**]
 FVate; Ranches verrucose; fruit under 1 in. across. ffrntcosa

338. SALACIA PRINOIDES DC.; F. B. I. i. 626. *Johnia coroman-*
deliana F. I. i. 169.

^undribuns, common ; Behar ; W. Bengal ; Orissa.
 A large climber with very foetid flowers.
 Beng, Modhu-phal.

339. SALAOIA ROXBURGHII Wall.; F. B. I. i. 627. *Jofmia sal-*
cioides F. I. i. 168.

Tippera ; Chittagong ^
 A large branching shrub.

340. SALACIA VERRUCOSA Wight; F. B. i. i- 628.
 Chittagong.
 A shrub.

183. Hippocratea Lin]

Sm¹U trees or climbing shrubs; *laves* opposite, pe^{tiolo};
 stlPules small, caducous. *Flowers* small, in axillary cyues or
 oocasiona% m terminal panicles. (Calyx small, 5-parti^e. Petals
 > spreading, imbricate or valvate ; disk conical or cuplike. *Stamens*
 3, recurved, alternate with lobes of ovarj. *Oiary* surroun^ by
 the disk. **8-locular**; styl< very stort or 0, »i^gnas 1-3; ales
 2-seriate. 2-10 in each cell. *Fruit* of 3 flattened carpels connate
 below, usually dehiscent. *Seeds* compressed, generally winged
 below; albunaen 0; embryo with large flat connate cc< \leaoii s.

BENGAL PLANTS.

Flowers minute, .05 in. across; leaves finely serrate.....*indica.*
 Flowers larger, A in. across; leaves shallow-crenate.....*macrantha.*

341. HIPPOCRATEA INDICA Wilm.; F. T. i. 165 j F. B. I. i. 624.

Behar.

A shrub with sarmentose branches. **Be*9.** Katha.
pah aria.

342. HIPPOCRATEA MACRANTHA Korth.

Chittagong.

A shrub with sarmentose branches.

Order XXXIX. RHAMNAGBJG.

Tree or erect or climbing, rarely cirrhose, shrubs, often scandent
 leaves simple, alternate or opposite, usually leathery, some
 reticulate-venate; stipules small deciduous, or if persistent spinose
 flowers regular, hermaphrodite or polygamous, small, in
 dense solitary or paniced cymes. Disk fleshy and filling
 calyx-tube, or membranous and lining the calyx, entire or lobed,
 glabrous or tomentose. Sepals connate as a 4-5-nd calyx
 lobes usually ridged internally
 petals 4-5, rarely 0, inserted on the throat of the calyx
 shorter than calyx-lobes, usually clawed and hooded
 stamens 5, inserted with and opposite the petals, filaments
 filiform, rarely dilated anthers
 lateral; dehiscence longitudinal
 or 4-11, rarely extrorse
 united as a sessile 3-, rarely
 5- or 6-lobed, inserted in the disk and superior, or
 as tenne
 -ect, an all f o * * ^ * ? * J rarely 2 in
 erect
 cent an su i r O I > O U S > the maphe dorsal rarely lateral. J Pr
 the ba, ^ or to TM' or "dehiscent dry or fleshy, free or girt »t
 inferior, adnate or middle by the adnate calyx-tube, or wholly
 in each cell Solitary J * * * I ? ' 1-4-celled, sometimes winged. Seed
 scanty, sometimes n. J ently arillate; albumen fleshy but often
 embryo large.

*Armed shrubs or trees
 disk; fruit half-superiorly 3-nerved leaves; ovary sunk in
 core; seeds albuminous [p . ^ 7 ' with ft hard ^ ^ ^] ed, 1-S-se
 Zizyphus.

*Unarmed climbers with penninerved leaves :—[p- 3³²1
Fruit hairy-s
as a narrow
apevior, **samaroid**, 1-celled, 1-seeded below, prolonged above
coriaceous wing ; seeds without allmmen

Fruit inferior, crowned with persistent calyx, 3-celled, 3-seeded ; seeds
alb ^ mous ; tendrils usually present :—
sometimes

P n * terete ; flowers subumbeliate ; branches cirrhose.....**Hehn**^{ul}

184. Zizyphus Juss.

Trees or shrubs, often decumbent, **sarmentose** or climbing
armed ; leaves **stutwious**, alternate, usually coriaceous, patoi
nerved ; stipules transformed into sharp ^ ^ ^ 3
prickles. **FlowM** in fascicles or in sessile or pedunoled
Calyx 5-nd ; lobes spreading, keeled within. P « ^ « 5 > cucullate
dp - 5 -nd ; lobes spreading, keeled within. P « ^ « 5 > opposite and
Jtiixed, rarely 0 . , digk 5-10-lobed. Sterna 5, adnate at
lten **nestling** under the petals. Ovary sunk in, or
to, the di(sk) 2-4-locle; styles 3-». rarely 4; usually mo,
?, le « B connate, stign.as small, papillose. **Frmt** - d ^ c e n
ur ***** fleshy o? **dry**, with a woody or bony l ^ J J ^
l- * ~ * **ed Putamen**. Seeds somewhat comprised; albumei
scanty or 0; embryo with thick cotyledons

- Flowers in sessile axillary cymes :— *vulgaris*
- Leaves glabrous *Jujuba*
- Leaves more or less pubescent :— *Enopliid*
- Leaves glabrous above, woollj beneath.....
- Leaves softly pubescent above, silk> beneath.....
- in peduneled cymes : ^ S *xylopyra*
- Cymes axillary *rugosa*
- Cymes in terminal panicles :— *rugosa var. glabrescens*
- Leaves tomentose beneath
- Leaves glabrescent beneath

34? « ZIZYPHUS VULGAIUB Lamk ; F. I. i. 609 ; F. B. I. i. 603
E. D. 2. 280.

Cultivated.
A small tree. *Hind.* Titni-ber, kandiari.

*1,14, ZIZYPHUS JUJUBA 19 Lamk ; F. i. i, 608 ; 1 B. .. !. ff-
E. Id. Z. 231.

Cultivated, general

A small tree. *Hind.* and *Beng.* Ber; *Safflc* ^ ^

Join ianum; *Uriya* Bar koli."

T i. 63*

345. ZIZYPHUS* (ENOPLIA Mill.; P. I. i. 611; F. #* *
E. D. 2. 263.

General.

A straggling shrub. *Bind.* Makai; ^ '# ' kol;
C7Wya Baro koli.

346. ZIZYPHUS XYLOPYRA Willd.; P. I. i. 611; F. B. * i. 634;
E. D. z. 290.

Behar; Chota Nagpur.

A small, usually gregarious tree. *Hind.* Kat-ber; *Santal.*
and *Kol.* Kar katta; *Uriya* Kanta bohul.

847. ZIZYPHUS RDGOSA Lamk; F. B. I. i. 636; B. D. Z. 273.
Z. tomentosa P. I. i. 611.

Chittagong.

A large shrub.

3-17^ - Var. GLABRKSCENS Train.

Chota Nagpur; Behar; W. Bengal.

A large evergreen shrub, often climbing. *Santal.* and
Kol. Tschkra; *Hind.* Kukh-ber.

185. Yentilago Giiern.

Shrubs, climbing; *leave** alternate, bifarious; stipule* very
Tnall, **caducous.** *Flowers* small, in axillary and terminal pa* nicles,
with small bracteoles. *Calyx* 5-fid; lobes spreading, keelefl *»-;
"be obconic. *Petal*, 5, deltoid or subcucullate; disk 5-lobed ^
free margin. *Stamen*, 5, opposite petals and adnate *o th6, r
bases; filaments longer than petals, connective produced. ^
sunk in i the **disk, 2-locular**; style very short. stigma ^
ovules
elonged abo
adnate calyx-tube. *Seed* sut* b o y e; albumen^; embryo with
thick fleshy cotyledons.

aohtuy. **Fruit** a subglobose, f-ceUed," 1 W e d "in* p
ve ma **linear oblong** coriaceous wing, girt below by
adnate calyx-tube. *Seed* sut* b o y e; albumen^; embryo with
thick fleshy cotyledons.

Branches and leaves glabrous or near -'y »o panicle, rather lax ;>>>;
girt by the calyx at the base.....

Branches and leaves pubescent; panicles ger >mula<tsj>at^<u
the middle »J nut girt by the calyx to

maderaspatana var. *caliculata*,

348. VENTILAGO MADERASPATANA Gaertn.; P. H. I. ; E. D.
V. 54.

[Vitis.

Order XL. AMPELIDEJE.

Shrubs, climbing by means of tendrils, less often erect, 01 trees; rarely subherbaceous; juice copious, watery, alternate, usually petioled, simple or digitately or pedately **pinnately** or twice pinnately compound, frequently gland-dc petiole usually thickened at the articulate base and often expan **In** a **membranous** stipule. *Flowers* regular, hermaphrodit 1-sexual, in paniced **umbel** or spicate cymes. *Vit* **united with petals stamens** or ovary, annular or *Sepals* connate in a small, **entire** or valvately 4-5-toothed or -lobed calyx. *Petal* 4-5, free or connate, valvate. caducous. *Stamens* 4-5 • opposite the petals, inserted at base of disk or between lobes; filaments short subulate; anthers free or connate, 2-celled; dehiscence longitudinal introrsc. *Carpels* connate perfectly or imperfectly 2-6-locular ovary, usually partially aw i" t! -j.Ssk; style short, slender or conical, or 0; stigma sni larr *; slightly lobed; ovules 1-2 in each **cell**, an is. mnhc ventral. *Fruit* indehiscent, berry- Ks 1-2-seeded. bee V-^rect; often 111 gu lose ; inous; embryo short, basal*.

Shrubs or subherbaceous plants, climbing by means of tendrils; rarely without tendrils; stamens connate with disk along with the ovary 3-6-locular, cells 1-ovuled.

188. Yitis LLm.

Shrubs or subherbaceous plants, climbing usually by tendrils rarely by adventitious roots; leaf opposite and then digitate or pedate, rarely unate or 2-pinnate; stop adnate to base of petiole, membranous, or 0. *Flowers* hermaphrodite or occasionally polygamous, usually ebracteate, in cymes disposed in racemes, spikes, panicles, or umbels short, entire or 4-5-toothed or -lobed. *Petals* 4-5, cohering at apex or free; disk conspicuous or small or 0. *Stamens* 4 & inserted below the margin of the disk; anthers free. *Ovary* rarely 3-4-locular; style short or 0; ovules 2 in each *Fruit* ovoid or globose, indehiscent, berry-like, 1-2-celled; 1-2-seeded. *Seeds* with a hard testa; albumen cartilaginous embryo minute basal.

AMTELIJ>MM.

Vitis.]

Leaves simple:—

Petal* and stamens usually 5; inflorescence a modification

intUils:—

f early glabrous; cymose panicles ample, with or leaves 3-5-lobed

More or less woolly-tomentose; panicles usually with cirr Branchlets, peduncles, and petioles with stiff black n with woolly tomentum; leaves usually sinuate-dentate, glabrous above and woolly only on nerves beneath

Branches, peduncles, and petioles woolly without * leaves lobed or palmate, tomentose— Petals and stamens usually 4; inflorescence of

Stem thick, succulent, 4-winged

stem herbaceous or woody:—

Stems and leaves beneath glabrous:—

Leaves membranous, broadly ovate Leaves subcoriaceous, suborbicular

Stems and leaves beneath pubescent:—

Pubescence rufous; leaves ovate-cordate, acute or bristly-serrate Pubescence woolly; leaves wide-cordate, often repand

Leaves compound; petals and stamens usually 4; innoies

ies:—

Leaflets 1-5:—

Leaves more or less pubescent:—

Pubescence present on both surfaces of leaflets:—

Leaflets 3, rarely 1; seeds compressed

Leaflets 5, sometimes only 3; seeds to

Pubescence only on lower surface of leaflets

leaflets 5; seeds solitary, obliquely ovate

Leaves glabrous:—

Style distinct; cymes very short; leaflets >>*

Style 0:—

Leaflets 1-3:—

Cymes very short, glabrous

Cymes slender, large, puberulous

Leaflet 5, or upper only 8; cyme short, put

Leaflets 7, usually softly pubescent; cymes equalling

petiole

351 • VITIS LATIFOLIA Boxb.; F. 1. i. 661; P. B. I. i. 652;

E. D. V. 213.

- Chota Nagpur; Behar; W. Bengal; C. Bengal-
A large herbaceous climber. *Beng.* ^{ā•ā}ila; *Santal.*
Ic'er.
352. VITIS BARBATA Wall.; F. B. I. i. 651; E. *i>*-^{v*} 19^j.
E. Bengal, Dacca; Chittagong.
A large climber.
353. VITIS TOMENTOSA Heyne; F. B. I. i. 650; E. *v*-^{v. 2tfl-}
Chota Nagpur; Behar.
A woolly climber. *Santal.* Ghora lidi.
354. VITIS QUADRANGULARIS Wall.; F. B. I. i-^{64t<} *ci***n**
quadrangularis F. I. i. 407.
Sundribuns; Orissa.
A square-stemmed climber. *Beng.* and *H**»" •
Vriya Harbhanga. *Cissus cordata*
355. VITIS REPENS W. & A.; F. B. I. i. 646.
F. I. i. 407. *C. pentagona* F. I. i. 408.
E. Bengal, W. Mymensingh; Chittagong.
A long slender climber.
356. VITIS ASSAMICA Laws.; F. B. I. i. 64H.
Chittagong.
A large climber. *ci***u**
- > 357. VITIS ADNATA Wall.; F. B. I. i. 647; E. D. V. 1>*-
adnata F. I. i. 405.
N. Bengal; C. Bengal; E. Bengal; Chittagong.
A slender climber. *Santal.* Bod-larnari.
358. VITIS KKI*ANDA W. & A.; F. B. T. i. 648.
(Chota Nagpur; liehar; W. Bengal.
A large climber.
359. VITIS TRIFOLIA Linn. *V. carnos*a F. B. I- i-^{G54} *ci***u** ^{^ • p,}
V. 195. *Cissus carnos*a F. I. i. 409.
C. Bengal; E. Bengal; Sundribuns.
A considerable climber. *Beng.* Amal-lata, Sone-kesfti-
360. VITIS TAPONICA Thunb. *V. wall* is P. H. T. i. 660.
Chittagong.
A considerable climber.
361. VITIS AURICULATA Hoxb.; E. D. V. 191. *Cissus auric* ^{^ t a}
F. T. i. 412.
Chota Nagpur, Singhbhum.
A large climber.
362. VITIS OXYPHYLLA Wall,

Chittagong.

◀▶ An extensive climber.

*** VITIS ANGUSTIFOLIA Wall.; F. B. I. i. 654. CUBUB <w<jvsh-
folia F. I. i. 408.

N. Bengal.

364 ^ rat ^ er slender climber.

• VITIS BRACTEOLATA Wall.; F. 11. I. i. 654.

N. Bengal, Rungpur; Chittagong.

0 ffr An extensive climber.

d6r > VITIS LANCEOLARIA Wall.; F. B. I. i. 660. (HBBUB lanceo-
laria F. I. i. 412. C. feminea F. I. i. 410.

ChotaNagpur,Parasnath; E.Bengal, Dacca; Chittagong.

>>00 A lar ge climber.

3C6, VITIB PEDATA vahl; F. B. I. i. 661; E. D. V. 217-
CIBHUS pedata F. I. i. 413.

Hiota Nagpur; W. C. and N. Bengal.

^ large weak climber. Beng. Goali-lata.

189. Leea Linn.

Small trees> erect shrubs, or herbs; branches striate or fur-
rowed; leaves alternate> usually large, simple or 1-3-pinnately
compound; petiole dilated at the base into sheathing stipules.
Flowers on leaf-opposed peduncles in corymbose cymes. Calyx
5-toothed. Petals 5, connate below and adherent to the staminal
tube, **>lute. ^ am ^ w outside the annular disk, connate faelo*
in a 6 ^ bed tube; filaments 5 above the tube free, inflexed, arising
between the lobes; anthers free and exserted from, or connate and
included in the tube. Ovar, on the disk, 3-6-locular; style shent,
stigma 8Wollon + Qvules sQlit;fy in each loculus. Frnt B-6-cell-l
3-6-sected, berry-like, usually succulent, subglobose, the top
depressed. Srei cuneate with a hard testa; albumen carti-
laginous J embryo minute, basal.

F! J*em red; leaves compound, primary nerves distant:-

innate.....alata.

greenish white:—

*Leaves compound :- [p. 340]

leaves with close, numerous primary nerves :- |p. 340| 1st parallel

leaves all simply pinnate; leaflets ^ , 0 ^ . *1st parallel

^ s; petioles and rachises often winged fp. <W>|crisp.

BENGAL PLANTS.

- [p. 339]
 Upper leaves simply pinnate or with the lowest pinnule only 3-foliolate, lower leaves 2-pinnate; leaflets coriaceous and rounded at base.
 Upper leaves usually 2-pinnate like the lower; leaflets rounded or cuneate at base.
 Leaves with rather distant, fewer primary nerves, all 2-3-pinnate.
 Leaves glabrous beneath.
 Leaves hirsute beneath:—
 Leaflets with hairs and scattered flat disks beneath.
 Leaflets pilose on nerves but with no disks beneath.
 *Leaves simple, white beneath with mealy pubescence.
367. LEEA ALATA Edgew.; F. B. I. i. 665.
 W. Bengal, very rare; E. Bengal, Madhupur jungles.
 A shrub, 2-5 feet high.
368. L&SA RUBKA Bl.
 E. Bengal, Dacca and Mymensingh.
 A dwarf shrub, 1-2 feet high.
369. LEEA CRISPA Linn.; F. I. i. 654; E. D. L. 226.
 E. Bengal; Tippera; Chittagong.
 A rigid shrub, 4-8 feet high. Beng. Ban-chálita.
370. LEEA ASPERA Edgew.; F. B. I. i. 665; E. D. L. 224.
 Chota Nagpur.
 A stout spreading shrub, 6-12 feet high.
371. L&SA RUBKA Bl. *L. crixpa* F. B. I. i. 665.
 W. Bengal; Chota Nagpur.
 A many-stemmed shrub, 12-16 feet high.
372. L&SA RUBKA Bl. *L. sambucina* Willd.; F. I. i. 657* F. B. I. i. 666;
 E. D. L. 241.
 E. Bengal; Chittagong.
 A rigid shrub, 4-10 feet high. Bong. Kukur-jhiwa.
373. L&SA RUBKA Bl. *L. urtica* Linn. *L. urtica* F. I. i. 555; F. B. I. i. 668;
 E. D. L. 229.
 C. and E. Bengal; Chittagong.
 A shrub, 4-10 feet high. Bong. Kak-jhanga.
374. L&SA RUBKA Bl. *L. robusta* Roxb.; F. B. I. i. 667* E. D. L. 237.
 Chota Nagpur; O. Bengal; E. Bengal; Chittagong.
 A shrub, 6-12 feet high. &.../. Haramada.

375. LEEA MACROPHYLLA Hornem.; F. I. 653; F. B. I. i. 664 partly; E. D. L. 232.

Chota Nagpur; Behar; Bengal generally. A herb, 1-3 feet high; the lower leaf often 1 foot across, the upper ones 5-1 foot. Hind. w&Beng. Dhol-samudra, Smtal. Hatkan.

Order XLI. SAPINDACEAE.

T*» or ahrubs, rarely undewhrubs or herbs, sometimes diming or fining, occasionally with tendrils. Leaves alternate or opposite, pinnate with leaflets alternate or opposite. 8-foliate Palmate, or simple, entire or serrate, sometimes lobed; stipules very rare. Flowers regular or irregular, usually polygamous, always small. Disk annular or oblique, occasionally 0 in ♂ flowers. usually 4-5, free or connate, often unequal, imbricate or connate. Petals usually 6 or 4 the ... basally ... flat or rarely cupular, of ten bearded ... free in ... Stamen, 5-10; filaments often pubescent, alternate ... ed between ovary and disk, on the disk, or at base of ... declinate; others 2-celled ... united ... tile; dehiscence longitudinal usually lateral ... or ... th^gho«t or below only in a median or ... * J j £ b A £ Z * J^locular ovary; style simple or divided, ... pending, ... simple; ovules 1-2, rarely more, in each: ... or campylo ... hed to inner angle, anatropous amphitropous ... rarely horizontal, the raphe usually ... aamariai. Seeds, or indehiscent and berry-like or dry, sometimes ... Without ... plicate. rarely globose or compressed, with ... f Present; embryo usually thick, occasionally spual

§Cocci of fruit deeply divided to nearly their base but *< spontaneously separating:— [p. 341]

Cocci oblong; testa of seed membranous ; scales of the p e f noded and crested. Eriogl^{os8U-}

Cocci ellipsoid or sub-3-gonous j" testa' cartilaginons; *>jf of petals not crested. Apha^{111*}
{Seeds arillate:—[p. 341]'

Fruit not deeply lobed, usually more than 1 cell developed^

Schleicnera.

Fruit sulcately lobed, usually only 1 coccus developed

Nephelium.

tOvules 2 in each cell of the ovary :- [p. 341]

Leaves pinnate; capsule coriaceous inflated, eubcompressed, reni-
for m, not Win S^{ed} ! stemens inserted inside the disk ; seeds ar^{illate}

Harpullia.

-eaves simple; capsule membranous not inflated, much compK^{essed,}
oblong, winged; stamens inserted outside the disk; seeds <i^{thout}
aullus

Dodonæa.

*Leaves opposite, stipulate; seeds albuminons, without arilla^s; stamens inserted outside the disk ; ovules 2 in each cell of ovary [p. 341] Turpinia.

190. Cardiospermum Linn.

Herb ICIC stems and branches by tendrils
leave z-ternate; leaflets dentate

irregular, polygamo-dioecious' <>> axillary racemes, the lowest^v f of pedicels transformed into ^ tendrils. S^afo 4, concave the outer pair smaller. P^{rth} 4, in 2 P - ^ the lateral larger pair usually adna to sepals ^ -ch with an exnarginate supra W scale, th^{si} ^ ler pair inferior remo^ from stamens and each with a " " oriented so"le; di^{8k} onesided, almost reduced to two glands opp" side th ^ 10 Wer 1)otals - Stamen, 8, excentric; filaments free or conn* the 4 >> << t^ glands shorter thai, the others. OvZvf"*

E. Bengal; Chittagong
A ngx^d Bhrub) 4-1Q f

373. LEEA AQUATA Linn. L. hirta F. I. i. 555; F. B. I. 373. E. D. L. 229.

C-and E. Bengal; chitta^{gong}.
A shrub, 4-10 feet high. J5e^ . Kak-jhanga.

374. L^AROBUS TARoxb.; P.B.I.i 667; B. D. L. J^{fl} ibjhul,
ChotaNagpur; C.Bengal; E.Bengal; Chittu
A shrub, 6-12 feet high. Santal. Haramada.

fleshy, 1^2 lobed, Ufcllescent, the lobes ellipsoid not separating as distinct ^{So*netiu} ^{co}cc1, ^ee d* with crustaceous or membranous testa, ^ ick ^J T ^ 1 fleshy edible arillus; albumen 0; embryo with

Leaves pinnate, scattered rubra.
Leaves simple, crowded at bases and ends of shoots Da num.

* APHANIA RUBRA Kadlk> scytalia rubra F. I. ii. 272.
Sa *m?us "Uenua-ta F. B. I. i. 684; E. D. S. 806.
Chittagong.

882. Apt SmaU tree> Vernac_ Lal koi-pura.
S ANIA DANURA Radlk. Scytalia Danura F. I. ii. 274.
i. 684. i i i a i a F i L ". 273* Sa; inclus Danura F. B. I.

Sundribuna; Chittagong.
A Small tree. Beng. Danura.

195. Schleichera Willd.

Tree . . . e av ^ alter nate, even-pinnate; leaflets subopposite, quite entire, or li- . . . tly serrate; stipules 0. Flowers regular, poly- Samo-dioe ^ us > fascic- . . . ted in simple racemes or panicles. Calyx disk comply au, CUpuIar; lobes valvate or subvalvate. Petals 0; Ovary ovoid e-e, annular* Stamens 6-8, inserted within the disk, deft. ovule 3-4, 3-4, locular, narrowed to the rigid style; stigma 3-4- 1 ^ -celled, 6 rect, solitary in ea h cell. Fruit dry, indehiscent, albumen n . rml ^ bUt thinl ^ coriaceous. Seeds erect, arillate; ledons. . . embryo with conduplicate, unequal, connate coty-

383 S
E. CHLEICHERA TRuuGA Willd.; F. I. ii. 277; P. B. I. i. 681; E. D. S. 950.

^ ; ar ChotaNagpur.
- rge tree. Hind. Kusum; Santal. Baru.

196. Nephelium Linn.

rp trees or shrubs; ^eave s alternate, usually even-pinnate; leaflets entire or rarely dentate, ^ alternate; stipules 0, or very rarely with lowest PairS of leallets stipuliform. Flowers regular, poly- gamous, in terminal and axillar ^ Panicles. Calyx 4-8-lobed, usually cupular, lob Subvalvate. Petals small without scales, or 0; disk flesh ^ of Subvalvate. Stamens 6, 8, or 10, inserted y' ^ abrous or pubescent.

within the disk. *Ovary* pubescent, sub^{^^}ucosej lobed[^] 2-3-
 locular; style erect, stigma 2-3-lobed; o\|,^s so11 tary^o each
 loculus. *Fruit* indehiscent, 1-3-, but usually 1" * ^ 1 1 8 r - oblong^{o1}.
 globose, echinate or tubercled, rarely smooth. needs globose,
 erect, with coriaceous testa, enveloped in a pulpy arillus; albu-
 men 0; embryo with very thick firmly fleshy cotyledons-
 Petals 0; calyx dentate; disk glabrous..... Lite ^
 Petals present; calyx deeply lobed; disk tomentose..... Lund^{o11**} ^

384. NBPHELIUM LITCHI Camb.; F. B. I. i. 687; E- ^

Scytalia Litchi F. I. ii. 269.

Planted generally.

A tree. *Hind.* Lichi. The Lit-chi.

385. NBPHELIUM LONGANA Camb.; F. 13. I. i- 688; **" p. N- 72.

Scytalia Longan F. I. ii. 270.

Planted occasionally.

A tree. *Betuj.* Ashphal. The Longan.

197. Harpullia Roxb.

Trees; *leaves* alternate, even-pinnate; leaflets alternat^t e, ^ ^ y
 0. *Flowers* regular, polygamous or polygamo-dioecious, in^{ct} equal,
 or subtenninal racemes or panicles. *Sepals* 4-5, ere >> ^ ^
 imbricate. *Petals* 4-5, narrowly obovate, without ^ ^
 scales; disk obscure. *Stamens* 5-8, elongated, ipserte^d ^ ^
 the disk. *Ovary* tomentose, ellipsoid or oblong, 2-locular, styl^{sed} ^
 elongated, stigma linear, twisted; ovules usually 2 supeipo^{sed} ^
 each loculus. *Fruit* a coriaceous, inflated, 2-lobed, 2-ce ll^d loc^{sed} ^
 lically 2-valved capsule. Sct[^] 1-2 in each cell, sub? ^ bo:
 usually arillate; albumen 0; embryo with thick henwsp^{dui}
 cotyledons.

386. HARPULLIA CUPANIOIDES Koxb.; F. I. i. 645; F. B. I- i- 692.
 Chittagong.

A straight-stemmed tree. *Vernac.* Harpulli.

198. Dodonaea Linn.

Shrubs; *leaves* simple, alternate; stipules 0. *Flowers* minute,
 polygamous or polygamo-dicecious, in lateral and terminal cymes.
Sepals 2-5, imbricate or valvate. *Petals* 0; disk obsolete in <? >
 small in \$ flowers. *Stamens* 5-10, but usually 8, inserted on the
 outer side of the disk. *Ovary* 3-6-angled and *3-6-locular; style

6-sided, axillary in each loculus - Capsule 2-6-sided, membranous or coriaceous, 1-2 in each cell, 2-6-valved, valves dorsally winged. Seeds globose or compressed lenticular, without embryo spiral.

- *ADONAEA VISCOSA* Linn. ; F. B. I. i. 697; E. D. D. 725.
- *9U8tifolia* F. I. ii. 256. *D. dioica* F. I. ii. 256.

Tirhut; Chota Nagpur; N. Bengal; Chittagong.

A shrub. *Hind. Aliar.* A good hedge-plant.

199. Turpinia Vent.

Pinnate, smooth branches; leaves opposite, odd-foliate, stipellate, serrulate; stipules interpetiolar, 8 small, hermaphrodite, regular, in terminal and axillary cymes. Calyx 5-partite, lobes imbricate. Petals 5, raised, lobed or crenulate. Stamens 5, inserted outside the ovary sessile, 3-lobed and 3-locular; style long, 2-ovulate, ovules in each loculus 2 collateral, or berry-like, superposed. Fruit indehiscent, subglobose, flattened. Seeds angular; testa hard shining, arillus 0; embryo straight.

- 388. *TURPINIA VOMIFERA* DC; F. B. I. i. 698; E. D. T. 847.

W/nipelia pomifera F. I. i. 633.

Chittagong.

A tree. *Vernac. Janoki jam.*

Order XLII. SABIACEAE.

Shrubs, climbing, or erect trees. Leaves alternate, simple or compound pinnate 5 stipules 0. Flowers regular or irregular, hermaphrodite or polygamous usually panicled, small. Disk usually small, annular. Sepals imbricate, connate in a 4-5-partite calyx. Petals 4-5, equal or unequal, opposite or alternate with sepals, imbricate. Stamens 4-5, opposite the petals, inserted at the base of or on the small disk all perfect or 3 without anthers; antheriferous filaments clavate or obcuneate, the sterile subulate; anthers 2, discrete; dehiscence transverse, or valvular or deciduous. Carpels more or less connate below 3-lobed 2-3-locular ovary; styles 2-3 free or connate 3-lobed 2-3-locular ovary; styles 2-3 free or stigmas minute; ovules in each loculus 1-2, super-

BENGAL PLANTS.

posed or collateral, horizontal or pendulous, raphe ventral.
 of 1-2 dry or fleshy, globose or compressed, indehiscent ripe
 with a hard 1-seeded endocarp. *Seeds* compressed or gibbous
 basal/with a broad hilum; albumen 0 or thin and adhere
 testa; embryo large, with thick often contorted cotyledons.

Stamens 4-5, all perfect and equal; drupes compressed,
 shrubs
 Stamens 5, very unequal, 2 only fertile; drupes subglobose;

200. *Sabia* Colebr.

Shrubs, sarmentose or climbing; branches with bud-scales
 sisting at their bases; *leaves* simple, entire, alternate-;
Flowers usually hermaphrodite, 2-bracteolate, axillary and
 or in axillary simple or paniced cymes; the members of
 whorls opposite. *Calyx* 4-5-partite. *Petals* 4-5; disk
 4-5-lobed. *Stamens* 4-6, inserted at base of disk. *Carpels*
 rarely 3, very slightly connate; styles 2, erect, terminal,
 connate; ovules 2 in each carpel, collateral or superposed,
 zonal. *Fruit* of 1-2 dry or drupaceous ripe carpels,
 somewhat compressed and gibbous with a subbasal style
 1-2 in each carpel, reniform, with coriaceous testa; album
 embryo curved.

389. SABIA LIMONIACEA Wall. ; F. B. I. ii. 3.

Chittagong.

A large climber with slender branches.

201. *Meliosma* Bl.

Trees or shrubs, usually more or less pubescent; *leaves* simple
 or bipinnate, with subopposite leaflets, rarely paripinnate,
 stipules 0. *Flowers* small, irregular, hermaphrodite, in branches
 terminal or axillary panicles; bracts caducous. *Sepals* and
 bracteoles persistent, 5-9, in an indistinguishable uninterupte
 spiral round the petals. *Petals* 5, outer 3 larger suborbicular, inner
 2 smaller; the outer valvate or imbricate, the inner often scale-
 like; disk annular or cupshaped, with 2-5 simple or divided teeth
Stamens altogether 5; 2 opposite the inner petals fertile, filaments
 short, flattened, incurved, adnate below to the petals, expanded
 upwards as a cup, bearing 2 globose transversely dehiscing anther-
 cells springing back elastically; a opposite the outer petals de-

druPe; stone crustaceous or bony, 2-valved. Seed gibbous, acute
^ one end; albumen 0; embryo with thick cotyledons.

Panicles pubescent, stout, stiff; flowers sessile; leaves broad, tomentose
0» both surfaces.....latifolia.
Panicles quite glabrous; flowers with slender pedicels; leaves narrow,
quite glabrous.....lancifolia.

392. BUCHANANIA LATIFOLIA Roxb.; F. I. ii. 385; F. B. I. ii. 23 ;
E. D. B. 913.

Oriasa; Ghot Nagpur.

A tree. Hind, and Beng. Piy&r, piyal; Kol Tarum.

393- BUCHANANIA LANCIFOLIA Roxb.; F. I. ii. 386; F. B. I. ii. 24.
Chittagong.

A tree.

203. Mangifera Linn.

Tr trees; leaves alternate, petioled, coriaceous, quite entire; stipules
O. Woivers small, polygamous, in terminal panicles, pedicels
Jolnted; bracts deciduous. Calyx 4-5-partite; segments imbricate,
deciduous. Petah 4-5, free or adnate to the disk, imbricate; disk
swollen or narrow. Stamens 1, or 2-5, rarely 8, inserted just
i*Jde the disk or upon the disk; when more than 1 usually the
ot*ers with smaller anthers, or imperfect anthers, or without
anther8- Ovary sessile, oblique, 1-locular with a lateral style;
^Sma simple; ovule pendulous from a basal or lateral funicle,
arely horizontal, solitary. Fruit a large fleshy drupe with a
c^pressed fibrous stone. Seed large, compressed; testa thin;
*lb albumen; embryo with flattened, often oblique and unequal,
sot sometimes lobed, cotyledons.

Cal y* and panicles quite glabrous:—
^nicies and long pedicels very slender; petals obtuse.....longipes.
Nicies and short pedicels very stout; petals acute, (wln te; disk
Ca ^* r; drupes acute).....<*f f'
^V* and panicles minutely tomentose or pubescent; panicles and snou
P^cels very stout; petals acute, yellow with reddish streaks; disk
"oe ci, drupes obtuse.....

3 H MANGIFBRA LONGIPBS Griff.; F. B. I. ii. 15.

Chittagong.

A tree, usually near the coast. Beng. Jangli am, unam
{Chittagong}; Magh. To-sdra.

395. MANGIFERA SYLVATICA Roxb.; F. I. i. 644; F. B. I. ii. 209.
E. D. M. 209.
Chittagong.
A tree, usually inland. Beng. Kosham.
396. MANGIFERA INDICA Linn.; F. I. i. 641; F. B. I. ii. 147.
E. D. M. 147.
Everywhere planted.
A tree. Z7riya, J3engr. and ffin^ . Am, amb ; Santa -
Kol. Ul, uli; Magh. Ing-sára.

204. Swintonia Griff.

Tall glabrous trees; leaves alternate, long-petioled, entire; stipules 0. Flowers in terminal and axillary racemes, hermaphrodite or polygamous. Calyx small, 5-lobed; lobes imbricate. Petals 5, adnate to the short or long linear-oblong, imbricate, accrescent and persistent reflexed fruit. Stamens 5, inserted on the disk, free. Ovary sessile, 1-locular, narrowed into the slender style; stigma small; ovule solitary, pendulous from a basal funicle. Fruit an smooth, sessile, leathery drupe, subtended by the 5 reflexed petals. Seed erect; testa thin; albumen 0; cotyledon amygdaloid.

397. SWINTONIA FLORIBUNDA Griff. S. Griffithii F. B. A. ii. 36.
S. SchwenMi E. D. S. 3040.
Chittagong.

A lofty tree. Beng. Boilsur, boilani.

205. Drimycarpus Hook. f.

Tall trees; leaves alternate, petioled, simple, quite entire; stipules 0. Flowers small, polygamo-dioecious, in axillary racemes. Calyx superior, 5-lobed; lobes obtuse, imbricate. Petals 5, erect, orbicular, imbricate; disk broad annular. Stamens 5, inserted at the base of the disk. Ovary inferior, 1-locular, short, stigma capitate; ovule solitary, lateral. Fruit a drupe with resinous flesh, transversely obliquely ovoid; thickly leathery. Seed attached to wall of cell; testa membranous; albumen 0; embryo thick, with large cotyledons.

398. DRIMYCARPUS RACEMOSUS Hook. f.; F. B. I. ii. 36; *10

D. 834. Holigarna racemosa F. I. ii. 82.

Chittagong.

A tall tree. Beng. Telsur; Magh. Sangrin.

206. Holigarna Ham.

Tall trees; *leaves* alternate, simple, entire, coriaceous; petiole with one or two pairs of deciduous appendages; stipules 0. **Flowers** small, polygamo-dicecious, crowded in axillary and terminal racemes or panicles. *Calyx* superior, tubecupular, teeth 5, imbricate. *Petals* 5, connate below and adnate to edge of disk; inserted in calyx-tube in 5, obscure in £ flowers. *Stamens* 5, inserted on edge of disk > adnate to the petals below. *Ovary* inferior, 1-locular; styles usually 3, sometimes 4-5, terminal, from the calyx or clavate; ovules solitary pendulous, lateral but near the apex of the loculus. *Fruit* a resinous, acrid, subcompressed, or oblong drupe; stone coriaceous. *Seed* parietal, testa 399 or 399 embryonic; albumen 0; embryo thick with large cotyledons.

HOLIGARNA LONGIFOLIA Roxb.; F. I. ii. 80; F. B. I. ii. 37; E. D. H. 317.

Chittagong.

A tall tree. *Beng.* Barola.

207. Semecarpus Linn. f.

Tree, *leaves* alternate, simple, entire, coriaceous; stipules 0. **Not** a tree. **Panicles** 5-6-fid; segments deciduous. *Petals* 5-6, imbricate. *Calyx* 5-6-fid; segments deciduous. *Petals* 5-6, imbricate. *Stamens* 5-6, inserted at the base of the ovary. *Ovary* 1-locular, stamens imperfect or 0; styles 1, clavate; ovule solitary, pendulous from a basal seated ovary. *Fruit* a firm drupe > oblong or subglobose, oblique, on a fleshy receptacle formed of the accrescent disk and acetabulum. *Seed* pendulous; testa coriaceous, somewhat fleshy; albumen 0; embryo thick with 2 vex cotyledons.

Leaves leathery, blunt, densely pubescent and strongly net-veined beneath; **Tree** pubescent. *Anacardium*. **Leaves** papery > acuminate, glabrous, and not very strongly veined beneath; **Ovary** glabrous. *subpanduriformis*.

400 - SEMECARPUS ANACARDIUM Linn. f.; F. I. ii. 83; F. B. I. ii. 35; E. D. S. 1041.

Behar; Chota Nagpur.

A tree. *Hind.* and *Beng.* Bhela; *Uriya* Bhallia; *Santal*, Soso; *Kol.* Losot.

401. SBMECARPUS SUBPANDURIFORMIS Wall.; F. B. I. ⁱⁱⁱ 35.

Chittagong.

A tree.

208. Anacardium Bottb.

Shrubs or trees; *leaves* alternate, petioled, simple, entire; stipules 0. *Flowers* small, polygamous, in terminal panicles. *Calyx* 5-partite; segments erect, imbricate, deciduous. *Petals* 5, linear-lanceolate, recurved, imbricate; disk erect, filling the calyx-tube. *Stamens* 8-10, usually 9, all fertile or one usually larger than the others; filaments connate and adnate to the disk. *Ovary* 1-locular, ovoid or excentric filiform, stigma minute; ovule solitary, ascending on lateral funiculus. *Fruit* a kidney-shaped nut, seated on a pyriform fleshy mass derived from the accrescent disk and peduncle; pericarp cellular and filled with oil. *Seed* kidney-shaped, ascending; testa membranous, adherent; embryo curved, cotyledons semilunar.

402. ANACARDIUM OCCIDENTALE Linn; F. I. ⁱⁱ 20; E. D. A. 1014.

Cultivated and sometimes appearing as wild in

Orissa and Chittagong.

A small tree, native of America. *Hind.* Kajju.

Kaju, hidgli-badam.

209. Odina Roxb.

Trees; *leaves* alternate, clustered at the ends of the branches, odd-pinnate, deciduous; leaflets opposite; stipules 0. *Flowers* small, monoecious or polygamo-dicecious, short-pedicelled, fascicled in tufted terminal racemes or panicles. *Calyx* 4-5-lobed, persistent; lobes rounded, imbricate. *Petals* 4-5, imbricate, annular, 4-5-lobed. *Stamens* 8-10, inserted within the disk. *Ovary* rudimentary, 4-partite. *Stamens* 8-10 or 0. *Ovary* sessile, oblong, 1-locular; styles 4, stout, stigmas capitate or capitellate; ovule solitary, pendulous. *Fruit* a small compressed reniform drupe, tipped by the distant styles; stone hard, compressed; albumen 0; embryo curved.

403. ODINA WODIER Roxb.; F. I. ⁱⁱ 293; F. B. I. ⁱⁱ 29; E. 1). o. 88.

In every province, including the Sundribuns.

A deciduous tree. £e«#. Jiyal; ffinrf. Jhingan; *Urlya* Indrainai; *Kol.* and *SantaL* Dhoka.

210. *Rhus* Linn.

rip. trees or S^ruls, with often an acrid juice; leaves alternate, simple or 1-3-foliolate or pinnate; leaflets entire or serrate; persistent. Flowers small > polygamous. Calyx small, 4-6-partite, 8-segmented. Segments subequal, imbricate. Petals 4-6, equal, inserted; imbricate; disk cupular > lobed. Stamens 4-6, or 10, functional. Anthers in flowers often imperfect. Ovary sessile, ovoid or simple or 3-lobed; styles 3, free or slightly connate below, stigmas capitate; ovule solitary, pendulous from a basal funiculus. Fruit small, compressed, dry, drupe-like; stone coriaceous, woody. Seed pendulous from the funiculus; testa albumen 0; embryo curved, with flattish cotyledons.

HUS KHASIANA Hook. f. ; F. B. I. ii. 10.

Chittagong.

A large tree, with odd-pinnate leaves. *Yernac.* *Kakrasingha.*

211' *Tapiria* Juss.

Scandent s "rubs" or trees; leaves alternate, odd-pinnate; leaflets numerous opposite, serrate; stipules 0. Flowers small, polygamous in axillary and terminal panicles. Calyx 5-partite; lobes imbricate. Petals 5, small, oblong, imbricate; disk broad, 5-lobed. Stamens 10, inserted at the base of the disk. Action in the disk, 4-lobed with 4-5 styles in i flowers; ovules 1-2, ovoid, more free, 1-lucur, w\Ui \ ^i"»i and simple stigma; ovule pendulous from apex of cell. Fruit obliquely oblong, fleshy, balsamiferous drupe; stone membranous; albumen 0; cotyledons large.

* AP^IA HIRSUTA Kurz ; F. 13. I. ii. 28. *Bobergia Ursula* P- I- ii. 455.

Chittagong; Tippera.

A scandent, usually softly villous shrub.

212. *Spondias* Linn.

of trees? leaves alternate, odd-pinnate, usually crowded at the ends of branches; leaflets opposite; stipules 0, *Fjoivers* small,

[Spondias.

polygamous, in terminal spreading panicles. *Calyx* small, 4-5 fid, deciduous; lobes slightly imbricate. *Petals* 4-5, ^{P^r} 8-10, ^{Jⁿ S^{erted}} ading, sub-valvate; disk broad, cupular, crenate. *Stamens* ^{t^{le} g[^] v[^]} beneath the disk. *Ovary* sessile, free, 4-5-locular; ^{s^J a^{tf}} connivent; ovules solitary, pendulous in each loculus. ^{^^ OX} fleshy drupe, with a hard 1-5-celled stone, the cells [^] diverging and opening by canals in the top of the ^{ton .} *Seeds* pendulous ; testa membranous; albumen 0 ; embryo straight, cotyledons elongate.

Leaflets 4-6-jugate, quite entire.....^{„viangv^{it}“}
 Leaflets 6-8-jugate, orenate-serrate.....^{...dul^{is},}

406. SPONDIAS MANGIFERA Willd.; F. I. ii. 451; F. B. E. D. S. 2649.

In all the provinces ; often planted.
 A tree. *Vernac.* Amra. The Indian Hog-Plum ^{^ ^ ^}

407. SPONDIAS DULCIS Willd.; F. I. ii. 452; F. 13- E. D. S. 2644.

Occasionally planted. Otahei*^e
 A tree. *Vernac.* Amra. The Hog-Plum > or Apple. Native of Polynesia.

Order XLIY. MORINGE-ffi.

Trees, with soft white wood and with gummy ^{j^{lc} d^r} ^{Leav^{es}} alternate, compound, simply or 2-3-pinnately ^{lea^{fl}e^{ts}} divided, opposite, entire; stipules and stipels 0 or reduced ^{to plan^g at^{it}} bases of leaves and pinnules. *Flowers* irregular, herinate ^{in^o d^{ite} > *^{ll}} axillary panicles. *Disk* lining calyx-tube. *Sepals* ^{he odd ^{Qtie}} cupular 5-cleft calyx; segments unequal, imbricate, ^{the ^{uppe}r} posterior, subpetaloid, deciduous. *Petals* 5, unequal, ^{5 [^] g^rf^ec*} pair small, the lowest largest. *Stamens* declinate ^{free, rather} opposite petals with 5-7 alternate sterile; filaments ^{1 ^{cel} led ;} thick, inserted on margin of disk; anthers versatile, ^{ti^{:-}tate} dehiscence longitudinal, extrorse. *Carpels* 3, connate in ^{g ^s ^ ^} 1-locular ovary with 3 parietal placentas; style slender ^{u [^] ^ ^} stigma truncate, perforated; ovules many, 2-senate ^{• 4 [^] Oil ^{cast} a} placenta, pendulous, anatropus, with raphe ventral. ^{Fruit a} 1-celled ^{ithin.} loculicidally 3-valved capsule, corky and pitted ^{ngless ;} *Seeds* many in the depressions of the valves, winged or without albumen 0; embryo straight.

213. *Moringa* Lamk.

The only genus. Characters those of the Order.

⁴⁰⁸MORINGA PTERYGOSPERMA Gaertn.; F. B. I. ii. 45; E. D.

^M- 721. *Hyperanthera Moringa* F. I. ii. 368.

In all the provinces, planted; but often also self-sown.

A small tree with corky bark, soft wood, and pungent root. *Beng. Hind,* and *TJriya Sajina*; *Kol. Mulgia j Santal.* Munga arak'.

II.—CALYCIFLORIE.

^Sⁱ ^{ab} connate, partially or completely, in a tube adnate to or ^{enc} enclosing the ovary, persistent or with the upper portion deciduous, ^{ve} rarely free. *Disk* adnate to the calyx-tube and free from the ^{on} ^{an} ^{or} ^{adn} ^a ^e both to ovary and calyx-tube, bearing the stamens ^{is} ^{somer} ^{ous} with the sepals or sometimes fewer by suppression, ^{ins} ^{or} ^t ^{at} the apex of the calyx-tube or on the disk lining the ^{caj} ^{yx}; occasionally absent. *Stamens* variously indefinite or definite, ^{nit} ^e, ^{insei} ^t on the margin or inner face of the disk, rarely outside ^{the} ^{epigynous} disk. *Carpels* free or connate, usually inferior or ^{enclosed} in the calyx-tube.

Order XLY. CONNARACEJE.

^Shrubs, erect or climbing, or trees. *Leaves* persistent or deciduous; alternate, 1-3-foliolate or imparipinnate; leaflets coriaceous, ^{ent} ^{ire}; stipules 0. *Flowers* usually hermaphrodite, regular or ^{so} ^{oi} ^{ew} ^{hat} irregular. *Disk* small annular, or imperfect, or 0. ^Sepals connate as a 5-lobed or 5-partite calyx, imbricate or valvate, generally persisting at the base of the fruit. *Petals* 5, imbricate or ^v ^r ^y rarely valvate, linear-oblong, free or slightly connate below. ^Stamens 10, occasionally declinate, alternately shorter and longer, ^{so} ^{metimes} 5, the shorter antipetalous series being imperfect, ^{peri} ^{gynous} or hypogynous within the disk; filaments filiform, often ^{connate} below; anthers short, didymous; dehiscence longitudinal [^] ^{torse} rarely after flowering extrorse by torsion. *Carpels* 5,

rarely fewer or more, globose, free, hirsute, 1-locular; styles subulate or filiform, stigmas minutely capitate or 2-lobed or ovules 2, collateral from inner angle at base of the ascending, orthotropous. *Fruit* of 1, rarely 2 or more, sessile stalked, 1-, rarely 2-seeded follicles dehiscing by ventral suture. *Seed* erect, often with basal arillus; testa thick, sometimes fleshy below the middle; albumen fleshy or 0; embryo with amygdaloid cotyledons in exalbuminous, and with leafy cotyledons in albuminous seeds.

Calyx enlarging in fruit, clasping the base of the sessile capsule
 Calyx not accrescent, clasping the pedicel of the stipitate capsule
 Connari

214. **Rourea** Aubl.

Shrubs, sometimes scandent, or small trees, with leaves; leaflets subopposite or alternate. *Flowers* small, in axillary panicles, on usually slender pedicels. *Sepals* connate in a tube with deeply partite limb; lobes 5, orbicular, imbricate, enlarged and clasping the base of the fruit. *Petal** 5, usually linear-oblong, exceeding the calyx. *Stamens* 10; filaments filiform, alternately shorter and longer, connate in a ring at the base. *Carpels* 5, usually 4 imperfect and reduced to functionless style the fifth perfect with slender subulate style. *Fruit* a sessile follicle curved somewhat outwards, the base clasped by a hardened calyx-limb. *Seed* erect, arillate, with a split arillus; testa smooth, shining; embryo without albumen.

409. ROUREA COMMUTATA Planch.; F. B. I. ii. 47; E. I. » 506.

Cnestis monadelpha F. I. ii. 454.

Tippera, Comilla; Chittagong.

A small tree. *Vernac.* Kowatothi.

215. **Connarus** Linn.

Trees or shrubs, with odd-pinnate or pinnately 3-foliolate leaves; leaflets opposite. *Flowers* small, in axillary panicles rarely racemes, on slender pedicels. *Sepals* connate in a short tube, deeply partite; lobes 5, oblong, slightly imbricate, not much or at all enlarging, spreading, not clasping the base of the fruit. *Petal** 5 linear-oblong, exceeding the calyx-lobes. *Stamen*, 10; filiform, alternately shorter and longer, the shorter with

Motionless anthers, connate below in a ring. *Carpels* 6, usually
4 ^ perfect, minute or suppressed, the fifth ovate with subulate
Bt yle. *Fruit* a stipitate follicle, enlarged upwards. *Seed* solitary,
ari Hate; testa smooth, shining; albumen 0.

4 10. CONNARUS PANICULATUS Roxb.; F. I. iii. 139; F. B. I. * ^ .
E. D. c. 1773.
Chittagong.
A large climber.

Order XLVI. LEGUMINOSÆ.

H B * «, shrubs, or trees. *Leaves* alternate rarely opposite,
usually > compound rarely simple, 1-foliolate, or pinnately
3-folic > late or odd- or even-phmate, less often digitately 3- or
more foliolate, rachis sometimes ending in a tendril, occasionally
in a 8 n i n e, occasionally leaf-like; stipules 2, usually free, laieij
minute, leaflets often stipellate. *Flower** usually irregular,
hermaphi ° 4 ite, rarely regular or polygamous; in axillary leaf-
opposed or terminal racemes or panicles, rarely solitary, bracteate
and usu e / 2-bractm mte. *Disk* adnate to calyx-tube. *Sepals* o,
usually connate, rarely free, often unequal, sometimes forming a
2-lab l i ate. calyx. *Petal* 5, rarely fewer by abortion, usually free
and unequal *Stamens* 10 perigonous or sub-hypogynous, rarely
- W e r b X arrest, sometimes indefinite; ittagenta free e or variously
c onnate; anthers 2-celled; dehiscence usually longi tudinal lateral.
O V ^ J . free, almost always a solitary carpel; style s v . ue ^ ^
usual y declinate, stigma capitate terminal, or o w i q ^ arel - few
very rarely exfc rorse; ovules usually several 2-senate, i ropous.
or sou tary, on the ventral suture, * T M V T M * o ^ ^ e * < , l e S *
Fruit usually a dry legume splitting along bow l se arating into
often a continuous indehiscent lomentum 0 l . with ^ ^ ^ ^
indehisce ant 1-seeded joints; rarely a drupe, f ^ s . ; an ari H us ;
l e a t t ^ < e r y rarely membranous coat, occasionally with, with fle & h y
alb ^ en 0 or scanty, very rarely cartilaginous; embijo
Or le afy cotyledons.

blowers h. regU lar; petals imbricate; stamens usually 10 f - [P ^ ^ ^
* Cal yx distinctly united below beyond the topot. the dis ; u ^ . 2-fidelpous
(standard) outermost; stamens very of ten 1-adej P P A P I L I O N A C E / E t
(9 + 1) [p. 300J. Subord r

*Calyx divided into lobes (except in some *Daiihinias*) down to the ^{t p of} disk; upper petal innermost; stamens almost always free [P-³ [^] ^{E.E.}

Suborder C7ESALPP

fFlowers regular ; petals valvate ; stamens often indefinite [p. 359]

Suborder MIMOSEAE

Suborder I. PAPILIONACEAE.

Herbs, shrubs, or trees. *Leaves* simple or digitated ^{or} [^] pinnately compound, rarely 2-pinnate; stipels very ^{G0XD} ^{^^} *Flowers* irregular, rarely almost regular, almost ^{aw} [^] hermaphrodite, never capitate, very rarely spicate. ^{Se} ^{*} ^y [^] united above the middle and beyond the disk in a ^{canl} ^P ^{anU} ^{ffcell} or tubular calyx with truncate, 5-toothed or 5-lobed ^{linta} ^o the two upper sepals connate and the limb 4-toothed, or the ^{two} [^] upper and three lower discretely connate and the limb ^b ² ^{ripP} [^] rarely closed in bud and spathaceous in flower. ^{Petal} ^s ^J ^e imbricate, erect or spreading, the upper (standard) outmost, or adnate below to stamens, the 2 lower (keel) inmost usu ^{ally} ^s connate by their adjacent margins, the 2 lateral (w ^u [<] ^{ely} intermediate often attached in the mid) ^{*} [^] ^{he keel}; ^f ^A the petals all erect, subequal, or reduce) ⁷¹ ^{*} [>] ^{one} (standa [^] ⁻ *Stamens* inserted with petals on the disk within the calyx ^{*} ¹ usually 10, free, or more often 2-adelphous th/e 9 lower conn ^{ate} ^{teral} in a sheath the upper solitary free, rarely 2-adolphous in ^l [>] ^{te} bundles of 5 each, rarely 9 the upper absent, or 5 the ^{*} ^t ^{am} ^{ans} ^{te} alternately imperfect and perfect, or 6 the intermediate altert [>] [^] 4 of the sheath imperfect, very rarely numerous. *Carpel* fee [•] *Seeds* usually with little or no albumen; embryo with usual ¹ ⁾ accumbent cotyledons.

^Stamens 1- or 2-adelphous:— [p. 365]

tPlants with basifixed hairs or glabrous; anthers not mucronate or gland-tipped:—[p. 365]

JPod dehiscent by both sutures:- [p. 363]

§Leaf-rachis ending in a bristle or tendril; leaflets even-pi^{fl}-nate:—[p. 361]

^Stems herbaceous; flowers axillary solitary, or racemed", stipules large foliaceous, oblique at base; stamens 10, 2-adelphous the vexillary stamen free, or 1-adelphous the vexilla[^] stamen joined to sheath:- [p. 361]

••Style not bearded ; wings free from staminal tube; leaflets toothed; seeds with a slender funicle; pod turgid [p. 361] Cuf*

**Style bearded ; wings more or less united to staminal tube; leaflets entire; seeds with short funicle :—[p. 360]

Staminal tube oblique at the mouth ; pod compressed :—

Style with dorsal tuft of hairs or bearded round tip; ovules usually more than 2.....**Yicia.**

Style longitudinally bearded along inner face; ovules never more than 2.....**Lens.**

Staminal tube truncate at mouth ; style bearded along the inner face:—

Pod compressed; style Tat, dilated at tip. . . . **Lathyrus.**

Pod turgid ; style 3-cornered, dilated upwards throughout **Pisum.**

^qStems woody; flowers in terminal racemeb ; stipules narrow, ^equif at base; stamens 9, 1-adelphous in a sheath slit above, ^vvexillary 0; style not bearded ; pod compressed [p. 360] **Abrus.**
[§]Leaf-rachis not ending in a tendril; leaves odd-pinnate or simple or digitately 3-more foliolate:—[p. 360]

leaves simple or digitately compound :—

Stamens 1-adelphous, 10, sheath split along back, anthers ⁵ long and 5 on alternating short free filaments; leaves not glandular beneath:—

Pod compressed, seeds 1-2 ; leaves simple sessile

Heylandia.

Pod turgid, seeds many; leaves simple sessile, or digitately 3-7 foliolate.....**Crotalaria.**

Stamens 2-adelphous, 9 + 1; seeds 2; leaves digitately 3-foliate or petioled 1-foliate, glandular beneath:—

Pod turgid; leaves digitately 3-foliate, with bracts small, or 1-foliate with bracts large; funicle centric ^

Flemingia.

Pod depressed between the seeds; leaves (in our species) 1-foliate with bracts small; funiele attached near end of hilum.....**Eriosema.**

^{Leaf}s pinnately compound:—

[^]Leaves pinnately 3-foliate, or if 1-foliate {Grow} with the leaves not glandular beneath :—[p. 363]

^{††}Pods dehiscing from apex to base :—[p- 363]

^{§§}Leaves glandular beneath; pod compressed; stamens 9 + 1; the two upper calyx-lobes much connate; funicie centric:—[p. 362]

^HOvules 1-2:—[p. 362]

^OCalyx-lobes accrescent, scarious-membranous; we lowest lobe largest [p. 362].....**Cylitt***

- 0 Calyx-lobes not accrescent, or if accrescent sub-equal and not scarious [p. 361]. Rhynchosia:
 ^i\ Ovules 4 or more:—[p. 361]
 Climbers; stigma small terminal;—
 Pod linear-acuminate, hardly depressed between the seeds. Dunbaria*
 Pod oblong-obtuse, deeply transversely lineate between the seeds. Atylosia;
 Woody undershrubs; stigma dilated, oblique; P^o* acute, deeply transversely lineate between the seeds
 CajanuB.
- § Leaves not glandular: Wflets stipellate:—
 p. 361J
- Style bearded below stigma; aimuens^{CJ} + 1*—
 Pod woody, septate between the velvety seeds; stigma oblique. DyBoloBium*
 Pod coriaceous, not septate between the smooth seeds:—
 Stigma oblique:—
 Keel spirally twisted Phaseolui'
 Keel not spiral:
 Style filiform Yigna.
 Style flattened upwards. Pachyrhi&ufl'
- Stigma terminal:—
 Pod flattish, not winged. DolichoS.
 Pod square, 4-winged; stamens submonadelphous. Psopl.ocarpu⁸
- Style not bearded below stigma:—
 Nodes of racemes not swollen:—
 Calyx-tube cylindrical, with oblique truncate mouth; style dilated in the middle; standard erect Dumasia;
 Calyx-tube campanulate, margin toothed, the upper teeth subconnate reflexed:—
 Stamens at length 2-adelphous; nnui-^ fertile **Glycine.**
 Stamens persistently 1-adelphous; * altern^{ite} anthers sterile. Teraninus*
- Nodes of racemes swollen:—
 Stamens 1-adelphous:—[p. 361J]
 lip of calyx projecting Canavali⁸
 upper-lip of calyx not projecting:—

Pod oblong, turgid, 1-2-seeded; anthers 2-morphous, 4 sterile**Dioclea***

Pod linear, flat or subcylindric, many-seeded; anthers uniform, sometimes sub-2-adelphous.....**Pueraria.**

•Stamens 2-adelphous (9 -1, - 1) :—[p. 362]

Petals of equal length :—

Leaves 3-foliolate; upper lobe of calyx entire.....**Galactia.**

Leaves 1-foliolate; upper lobe of calyx 2-toothed.....**Grona.**

Petals very unequal:—

Anthers uniform; keel and wings both shorter than standard; armed trees; stamens submonadelphous.....**Erythrina.**

Anthers dimorphous; standard shorter than keel and wings; climbers.....**Mucuna.**

JJPods dehiscing at seed-bearing apex only, elsewhere seedless and indehiscent:—[p. 361]

Petals unequal; flowers large **Butea***

Petals subequal; flowers small.....**Spatholobus.**

• f leaves pinnately 5-many-foliolate ; pods dehiscing from apex to base :—[p. 361J

Style bearded below the stigma; flowers with very unequal petals, standard large.....**Clitoria.**

• Nyle not bearded; fln«v»« itw-dimn. On- ^imlurd not longer than the other petal> :

Pods transversely septate between triè HVVM* ; .-unions 2-adelphous (9+ 1).....**Sesbania.**

Pods not septate ; stamens submonadelphous, the vexillary stamen usually united in iho middlr to the edges of the sheath :

Leaflets iusei> puisne->*... i»»d thin, early-dehiscent.....**Tcphrosia.**

• »s reticulately veined; pou thick, tardily**Millcttia.**

• Pod indehiscent or rarely (some *Desmodui*) opening along the v«ntral suture :—[p. 300]

• SLeaves not pelucid-dotted :— [p. 365J

= Pod not segmented, always indehiscent* •

x Leaves odd-pinnate :—[p. 364]

+ Trees or strong woody climbers ; icafrtris entire . . . ^ 1

Leaflet'opposite, stamens usually submonadelphous the vexillary stamen united in the middle to the sheath, sometimes 2-adelphous (9 + 1) :—

Pod wingless Pongamia.

Pod winged Derris.

Leaflets*distinctly alternate :—

Flowers -small; pod* narrow Dalbergia.

Flowers many; pods suborbicular Pterocarpus.

~ Herbs ; leaflets with transverse veins produced as marginal teeth ; leaves always 3-foliolate :—[p. SW]

Pod subglobose, hardly longer than calyx iftilia.

Pod flattened, much longer than calyx :—

Pod straight or curved, not spiral Trigonella.

Pod spirally twisted Medicago.

x Leaves even-pinnate, the rachis ending in a bristle; herbs with hypogaeal fruits [p. 868] Arachis.

• Pod of 1 or several indehiscent 1-seeded segments; in some Detmodia dehiscing along the ventral suture:—[p. 868]

Leaves exstipellate :—

Stamens 1-adelphous, anthers dimorphous; leaves digitately 2-4-foliolate; joints of pod muricated, several Zornia.

Stamens 2-adelphous, anthers uniform :—

Stamens 9 in a sheath slit above with a free vexillary stamen; leaves 1-3-foliolate :—

Stipules spinescent; leaves always simple ; joints hardly separating; vexillary stamen always free Alhagi.

Stipules not spinescent; leaves usually 3-foliolate, rarely 1-foliolate; pod a solitary 1-seeded flattened segment;

vexillary stamen sometimes partially united to sheath Lespedeza.

Stamens in 2 lateral bundles of 5 each; leaves pinnate; Joints of pod papillose or weakly muriculate:—

Leaves even-pinnate, end-leaflet replaced by • brittle; folded within the calyx Smilax.

Leaves odd-pinnate; pod straight exserted ; marsh plants Aeschynomene.

Leaves stipulate; stamens (9 + 1) diadelphous or weakly adelphous; joints of pod usually about as long as broad: ^

Ovary 1-ovuled; leaves 1-foliolate Elymus.

Ovary 2- or more-ovuled:—

+Pod folded within the calyx:—[p. 865]

©Calyx-teeth setaceous, not accrescent [p. 866] .. Verrill*

O Calyx-teeth lanceolate, accrescent [p. 364].....Lourea.
4-Pod straight exserted :— [p. 3G4]

A tree; joints of pod thin, wing-like, large; flowers in fascicles from the old wood; stamens dimorphous

Ougeinia.

Herbs, rarely shrubs; joints of pod not wing-like; flowers from the year's shoots; stamens uniform:—

Joints of pod thin or, if coriaceous, broader than thick; if as thick as broad much longer than broad ; sometimes opening along lower suture.....**Desmodium.**

Joints of pod coriaceous, about as thick as they are broad and long.....**Alysicarpus.**

§Leaves pellucidly gland-dotted ; leaflets 1 (in our species), their Margins toothed; stamens 2-adelphous or submonadelphous; Pod indchiscent [p. 868].....**Psoralea.**

Plants with hairs on twigs, leaves and calyx fixed by their centres; Stigma mucronato or gland-tipped :—fp. 3fiO]

Stamens 1-adelphous, sheath tubular; pod thick; leaflets 3. large,

Stamens 2-adelphous (9 + 1), sheath slit above; pod slender;

Leaves usually small, entire; leaves simple or digitately or pinnately 3. or more-foliolate.....**Indigofera.**

Stamens fr :—[p. 360] «-pinnate ; bracts and bracteoles small, caducous:—
Leaves oblong ; P^o1 lo»K» moniliform. **Sophora.**

Stigma oblique ; A shorii tul>Ki(I)

Leaves 1*fol»olatic ; bracts and bracteoles large, opposite, persistent

216. Cicer Linn.

Ann al 11erlj s; with usually even-pinnate rigid Leaves; leaflets strongly veined and deeply toothed, the

with a ter g in a bristle or tendril, sometimes in cultivated forms
Wacts sma; bracteoles 0- Sypals connate in an oblique tube ;
limb with 5 Janceolate Hubequal teeth. Petals exserted; standard

broad arr. wd to a wide claw» lon «er thftn "ing* ftnd keel; wings
obliq u r l
one fl. obov. tate free; keel incurved. Stamens 10, the vexillary
2-many-ovu d. hyle filiform, incurved, heardleRH ; stigma terminal,

capitate. Fruit an oblong sessile turgid pod, narrowed into the
persistent 4tyl e. Seeds subglobose or irregularly ovoid h i l u m
small.

411. CICER ARIETINUM Linn.; F. I. iii. 324; F. B. I. ii. 176; E. D. C. 1061.

Generally cultivated in Tirhut, Behar, N. and W. Bengal. A small herb. *Hind.* Chola, but, but kalia; *Bcng*> Channa; *Santal.* But. The Gram or Chick-Pea.

217. Yicia Linn.

Annual or perennial herbs; *leaves* even-pinnate; rachis ending in a twisted tendril, rarely in a simple point; stipules *sen**^{tr} sagittate, stipels 0. *Flowers* subsessile axillary 1-3, or in peduncled axillary racemes; bracts small caducous, bracteoles 0-*Sej>als* connate in a campanulate tube often oblique; lobes 5 subequal or the 2 upper shorter and the lowest longer than the lateral-*PetaU* exserted; standard obovate emarginate, narrowed into ° wide claw; wings oblong oblique, adnate in their middle to *tn*^e shorter keel. *Stamens* 10, the vexillary one free or slightly connate with the rest; anthers uniform. *Ovary* subsessile *o*^r stipitate, usually many-ovuled, rarely 2-ovuled; style inflexea* filiform, or flattened, usually pubescent with a dorsal tuft *o*^r subapical ring of hairs, rarely glabrous; stigma terminal, *capita**^{tr}. *Fruit* a compressed pod, continuous within. *Seeds* globose, rarely compressed; hilum oblong or linear.

Stems prostrate; leaflets 4 or more *pni>**: *mi-liis* of leaf ending in *n*^{tr} tendril:—

Flowers solitary, almost sessile, large *^>* *m,i*; *i_juu** *^luorous*, *v* seeded:—

Leaflets wide, obtuse..... *... .trid.*

Leaflets narrower *ihnsn* of *IOWLT* leaves *retusr*

mtiva var. *aiujuatijo*^{^r}

Flowers several in a *pemuicicii* *tuceiue*, small ('15 in.); pods show hairy, 2-seeded..... *hirs* *^*

Stems erect; leaflets 3 or fewer pairs; rachis of leaf ending in a *sin*^r point..... *Fabi.*

412. VICIA SATIVA Linn. iii. 82<J; I . I. I. »• 178; E. D. V. 114.

Sometimes cultivated.

A Binall herb. *Hind*, and *Beng.* Ankori. The Tare.

412/2. Var. ANOUSTIFOLIA; E. D. V. 114.

General throughout the area.

A small prostrate or climbing herb.

413. VICIA HIRSUTA Koch; F. B. I. ii. 177; E. D. V. 112.
Frvum hirsutum F. I. ii. 323.

A general field-weed.

A small prostrate herb. *Beng.* Musur-channa; *Hind.* Shunjhuni-ankari; *Santa I.* Tiririte.

414. VICIA FABA Linn.; F. I. iii. 323; F. B. I. ii. 179;
 E. D. V. 108.

Occasionally in gardens, especially in Tirhut and N. Bengal.

An erect herb. *Hind.* Bakla, anhuri. The Bean.

218. Lens Gren. & Oodr.

Annual herbs, erect or subscandent; *leaves* usually even-pinnate, the rachis ending in a tendril or a simple point occasionally with a terminal leaflet; stipules semi sagittate, stipels 0. *Flowers* axillary, peduncled, solitary, or in few-fl'd. racemes; bracts and bracteoles 0. *Sepals* connate in an oblique tube; lobes 5, elongate, subequal. *Petals* exserted; standard broad, narrowed to a very short, wide claw; wings oblong, oblique, adnate in their middle to the shorter keel. *Stamens* 10, the vexillary one free, the others connate in an oblique sheath; anthers uniform. *Ovary* subsessile, 2-ovuled; style inflexed, bearded longitudinally on the inner face; stigma terminal. *Fruit* a compressed 1-2-seeded pod, continuous with the stem. *Seeds* compressed, lenticular; hilum ovate or oblong.

415. LKNS RSCULKNTA Moench; E. 1). L. 2. *Cicer Lens* F. I. iii. 324. *Krvum Lens* F. B. T. ii. 179.

Cultivated, especially in northern and western parts, also in Cliif.fjifrnir. *Vernnr.* jVfawuri, masur. The Lentil.

219. Lathyrus Linn.

Annual or perennial herbs with even-pinnate *leaves*, the rachis ending in a tendril or bristle, sometimes wholly cirrhose; stipules leafy, sagittate or semisagittate; stipels 0. *Flowers* axillary, peduncled, solitary or racemose; bracts usually minute, caducous, bracteoles 0. *Sepal* connate in an obliquely campanulate tube sometimes gibbous behind; teeth 5, subequal or the 2 upper shorter. *Petals* more or less exserted; standard broad, narrowed to a short, wide claw; wings falcate or obovate or oblong, slightly adnate in the middle to the shorter incurved keel, or occasionally free. *Stamens* 10, the vexillary one free or more or less connate with

the others, which are united in a sheath with a straight mouth; anthers uniform. *Ovary* subsessile or stipitate, many-ovuled; style dorsally flattened, bearded longitudinally on the inner side: stigma terminal, capitate. *Fruit* a subterete or compressed pod, continuous within, several-seeded. *Seeds* globose or angled, rarely compressed; hilum small or linear.

Leaves reduced to tendrils; stipules large ovate, leaflike; flowers yellow

Aphaco-

Leaves pinnate, with 1-2 pairs of leaflets; stipules small semisagittate; flowers blue or sometimes white..... *saliva*

416. LATHYRUS APHACA Linn.; F. I. iii. 822; F. B. I. ii. 179 5
E. D. L. 96.

A general, but not common, field-weed.

A small herb with leafy stipules. *Beng.* Jangli mâtár.
Masur-channa.

417. LATHYRUS SATIVUS Linn.; P. I. iii. 322; F. B. I. ii. 179;
E. D. L. 100.

Generally cultivated.

An annual herb. *Vernac.* Kesári, kassur.

220. Pisum Linn.

Herbs, diffuse or climbing; leaves even-pinnate; leaflets 1-3 pairs; rachis ending in a simple or branched tendril or a simple point; stipules foliaceous, semicordate or semisagittate, stipules 0. *Flowers* axillary peduncled, showy, solitary or in few-flowered raceme; bracts very small caducous, bracteoles 0. *Sepals* connate in an oblique tube sometimes gibbous behind; lobes 5, subequal or the 2 upper wider. *Petals* much exserted; standard very broad, narrowed to a short, wide claw; wings oblong falcate, adnate to their middle to the shorter incurved obtuse keel. *Stamens* 10, the vexillary filament free or connate by its middle with the rest, the sheath of which is scarcely oblique; anthers uniform. *Ovary* subsessile, many-ovuled; style inflexed, hard, dilated with reflex edges, compressed laterally towards the top and there longitudinally bearded on the inner side. *Fruit* an obliquely pointed compressed or subtergite pod, continuous within, several-seeded. *Seeds* subglobose; hilum oblong.

•Standard white or pale violet, wings and keel purple; seeds depressed, angular, green or purple, mottled; point of attachment of stipules [p. 369].

* Standard, wings, and keel white ; seeds rounded, green or pale straw* floured; point of attachment of stipules pale green [p. 868].....*a' - •''''''

418. **PRAUM AHVBNM** Linn.; P. B. I. ii. 181; J. J. P. 88^f

Cultivated, especially in the northern and cu, . . .
An annual herb. Vernac. Mfcar. The Field-pt.

419. **PISUM SATIVUM** Linn.; P. I. ii. 821; P. B. I. incan
E. D. P. 885. ''''.

Cultivated, especially in the western parts.
An annual herb. Beng. Cabuli-m&tar. The Pea.

221. Abrus Linn.

shrubs or undershrubs, with twining stems; leaves even-pinnate leaflets many-paired, subdeciduous; rachis ending in a simple D
stipules subscarious, striate, lanceolate, deciduous; stipels mil
b'unt, persistent, rigid. Flowers small, distinctly pedicel
r«-cemose fascicled on the nodes of terminal peduncles or
a'iaosfc leafless, short, axillary branches ; bracts small, ovate, «e;
^ciduous; bracteoles under the calyx 2, lanceolate, de->int;
sepals 5, connate in a subtruncate tube, the teeth short, tftute,
2 subconnate. Petals exserted; standard ovate narrowed,
8hort claw slightly adnate to the stamina! tube ; wings f.jn
oblongs spreading, free, shorter than the curved keel. Sta,
°°nnate in a sheath split along the top, the vexillary filamen.
a'osen|; free portions of filaments alternately longer and shorter;
others iniiforra. Ovary sessile, several- or many-ovuled; style
short, incurved, not bearded; stigma terminal capitate. Fruit an
°olong or linear pod, considerably or much compressed. Seeds glo-
bose or compressed ; testa smooth, shining; hilum shortly oblong.
Pod' twice to thrice as long as broad, fairly thick, somewhat corrugated;
8^eds rounded.....preeatorUu.
Pods four to tiv«' times as lon« as broad, thin, smooth ; seeds compressed.
pulehtUui.

420. **AHKUS PRKUTOBIUS** Linn.; I. I. iii. 257; P. I. i. 175;
E. I. A. 51.

In all the provinces.
A slender climber. Hind. Gaunehi, rati, chirmiti;
Beng. Kunch, chun-hatt; Sanfal. Kawet.

421. **AMKI-S i ULUBELLUS** Wal!.; R. I. ii. 175.

N. Bengal; E. Bengal; Tippers; Cluttagong.
A slender climber.

222. Heylandia DC.

strate herb; leaves close-set, alternate, simple. Flowers
 A solitary. Sepals connate in a turbinate tube; teeth
 small, lower longer than the 2 subconnate upper. Petals
 lanceolate, inserted; standard suborbicular with 2 basal scales at the
 margin; short claw; wings short, obovate-oblong; keel narrow,
 to the base connate, narrowed to an incurved beak. Stamens
 10; 4 in a tube slit above; anthers alternate, short versatile, and
 6 basifixed. Ovary sessile, 2-ovuled; style abruptly incurved
 long, elongated, longitudinally bearded above; stigma terminal,
 at the tip of a long oblong 1-2-seeded pod, continuous within. 6 seeds
 Fruit a strophiole; funicle filiform.

with. HKYLAXIHA LATEBROSA DC; P. B. I. ii. 65. Grotalari*

4 unijora P. Liii. 271,

N. Bengal; Tirhut.

.17. A small weed.

223- Crotalaria Linn.

JB or shrubs; leaves simple or digitately compound, often
 lie, rarely 1- or 5-7-foliolate; stipules free from petiole*
 H. Leaves decurrent on the stem, occasionally small or 0-
 whorled often showy, in terminal or leaf-opposed racemes, rarely
 solitary; bracts small or 0, rarely leafy; bracteoles on pedicel
 sometimes at calyx-base small, rarely 0. Sepals connate in a
 short tube; teeth 5, linear or lanceolate, subequally discrete, or
 rarely the 2 upper or the 3 lower, or both, more or less connate as
 upper and lower lips, occasionally the 4 upper subconnate in
 lateral pairs. Petals as long as or exceeding calyx; standard
 usually orbicular, with usually a single callosity above the short
 claw; wings shorter, obovate-oblong; keel broad, as long as wing
 its petals connate, much incurved, markedly beaked. Stamens 10
 connate in a sheath slit above; anthers alternately short versatile,
 and long basifixed. Ovary sessile or rarely stipitate, 2-many-
 ovuled; style much incurved, often abruptly inflexed, more or less
 bearded longitudinally above; stigma oblique, small. Fruit a
 globose or oblong very turgid or inflated pod, continuous within.
 Seeds small (11, without strophiole; funicle filiform.

*Leaves digitately compound:—[p. 371]

Leaves almost always 5, KBM time 7. \< iy I.U. ly >, narrowly linear

°r oblanceolate, obtuse; pod glabrous many-seeded, **cylindric**, shortly stalked..... *quinquefolia*.

Leaflets always 3, ovate or oblong:—

Pods oblong or cylindric, many-seeded:—

Erect, shrubby; bracts minute setaceous; pods large:—

Pods pubescent, subsessile:—

Leaflets obovate, obtuse; pod loosely pubescent..... *incam*¹.

Leaflets oblong, acute; pod densely pubescent..... *bracteata*.

Pods glabrous:—

Pods subsessile:—

Leaflets oblong, acute..... *Browtui*,

Leaflets obovate, obtuse..... *SaUiana*.

Pods with u long, slender, filiform uynophore; leaflets obovate-oblong acute..... *htburni/olia*.

Prostrate, diffuse, herbaceous; krauts conspicuous, foliaceous, persistent; pods small, glabrous, long-stalked..... *orUensis*.

Pods small obliquely subglojK.se, 2-seeded; leaflets small oblanceolate; bracts **liiyum** minute..... *mtdieaginea* var. *ne;lecta*.

leaves simple:—[p. ;fio]

Stipules pe^aiatiiiig as long decurrent wings along the twigs; pod **linear-blon** many-seeded, stipitate, glabrous..... *alata*.

Stipules, if present at all, not decurrent along the twigs:—

Erect shrubs or herbs; seeds 10-20:—

Shrubs with strict, erect branches; racemes both terminal and lateral; pods pubescent or velvety:—

Leewes orate; branohleta angular; itipulea foliaceous semi-lunar, large; ticwers usually blue and white..... *irm« •sa*.

Leaves lanceolate or linear; stipules minute or 0; flowers yellow:—

Branchlets angular; leaves **aeominate**; pod shortly stalked *tetragona*.

Branchlets rounded, grooved; leaves obtuse; pod sessile *juncea*.

Herbs with stout, **anbranohed** stems; racemes **terminal** only; pods glabrous:—

Stipules subulate, minute; bracts deciduous; leaves obtuse *rethsa*.

Stipules foliaceous, leafy; bractB reflexed persistent; leaves acute *sericea*.

Diffuse low herbs, or rarely shrubs; stipules small or 0:—

Low annuals or almost **tttmifitfl** shrubs with many ascending **branchef** and **terminal raoemee**; corolla hardly, if at all, extended:—[p. 372]

Pods obviously exerted from calyx:—

Stipules linear, persistent; bracts lanceolate, foliaceous; leaves linear-oblong, obtuse; pods sessile, glabrous ...*myaoren****.

Stipules 0:—

Pods silky; bracts minute, lanceolate; leaves linear, small; annual, densely silky herbs.....

Pods glabrous:—

Bracts lanceolate, foliaceous; leaves linear, obtuse annual, finely hairy herbs.....

Bracts linear, very minute; leaves linear or oblanceolate, obtuse; perennial, obscurely silky, slender plants....

Pods included in calyx, glabrous; annual herbs:—

Stipules 0; upper calyx-teeth connate; bracts and bracteoles very minute; leaves linear or oblanceolate, obtuse:—

Racemes capitate or subumbellate..... *nana* var. *patula*.
linifolia.

Racemes elongated, lax..... *u*cts

Stipules minute, setaceous: calyx-teeth all elongated; bracts and bracteoles long:—

Flowers in densely congested rounded heads; bracts and bracteoles broad, ovate-acute; leaves subacute.....

Flowers in lax or elongated racemes; bracts and bracteoles narrow; leaves linear or lanceolate:—

Racemes elongated; flowers close, blueish, usually mottled; bracts and bracteoles setaceous..... *elijlor*

Racemes short; flowers lax, yellow, always few, bracts and bracteoles lanceolate..... *calycit*

Prostrate herbs with flexuous, trailing stems; flowers lateral, solitary or in few-flowered racemes:—[p. 371]

Pods silky:—

Corolla hardly exerted; pods finely silky, at length glabrescent; Bubglobose; stipules very minute or 0..... *ylvbuluygSi*

Corolla distinctly exerted; pods finely downy, oblong; stipules small, linear.....

Pods glabrous:

Stipules 0:—

Leaves obliquely cordate; pod short-stalked..... *trichophora*.

Leaves obovate-oblong; pod sessile..... *pru*trata*.

Stipules present:—

Stipules small, lanceolate; bracts deflexed; pods sessile -25--30 in. long..... *acitlari**

Stipules foliaceous, persistent, often deflexed; bracts spreading; pods shortly stalked, 1-1-25 in. long..... *urruiueu*.

428. CROTALARIA QUINQUEFOLIA Linn.; F. I. iii. 279; F. B. I. ii. 84.

Behar; N. Bengal; **Chota Nagpur.**

An erect annual, 2-4 feet high.

424. CROTALARIA INCANA Linn.; F. B. I. ii. 83.

Cultivated, also at times an escape, especially in Chittagong.

An undershrub, 2-4 feet high.

425. CROTALARIA BRACTEATA Roxb.; F. I. iii. 278; F. B. I. ii. 83.

Chittagong.

A small shrubby species.

426. CROTALARIA BROWNEI Bert. *C. trita* F. B. I. ii. 84 partly.

Cultivated and also in some places naturalis d.

427. CROTALARIA SALTIANA Andr. *C. trita* F. B. I. ii. 84 Partly; E. D. C. 2159.

Throughout Bengal, including the Sundribuns; and in Chittagong.

448. CROTALARIA SALTIANA Andr. *C. trita* F. B. I. ii. 84 A roadside weed, probably introduced during the last century. *Santa I.* Can junk a.

449. CROTALARIA LABURNIFOLIA Linn.; F. I. iii. 279; F. B. I. ii. 84; E. D. C. 214a

F. Bengal.

A low shrub. *Hind. Mana.*

450. CROTALARIA ORIXENSIS Ilottl.; F. I. iii. 276; F. B. I. ii. 83

Behar; Orissa.

A diffuse herbaceous perennial with slender, much-branched stems.

451. CROTALARIA MERICAGINEA (L.) C. var. *NHGLKITA* Bak.; F. B. I. ii. 81. *C. procumbens* F. I. iii. 278 partly. E. D. C. 2151.

Chota Nagpur.

A diffuse perennial with slender ascending stems.

- Und 1-folio, stipule subcap ^ftrov CROTALARIA ALATA Hani.; F. I. iii. 274; F. B. I. ii. *9.

Bengal; Behar; Chota Nagpur.

An undershrub.

- CROTALARIA TIBBUCOU (L.) C. var. *anulosa* F. I. iii. 273.

Orissa; C. Bengal; Sundribuns; Chittagong.

A subherbaceous undershrub. *Vernae*. **Ban-^an.**

433. CROTALARIA TETRAGONA **Roxb.**; F. I. iii. 268; F. B. I. ii. 78.
Chittagong.

A stiff shrub, 6 feet high, with dark-brown velvety pods;

434. CROTALARIA JUNCEA Linn.; F. I. iii. 259; F. B. I. ii. 79
E. D. C. 2105.

Cultivated generally and sometimes spontaneous.

A rigid shrub. *Vernae*. "Sunn," Can.

435. CROTALARIA RITUSA Linn.; F. I. iii. 272; F. B. I. ii. 75
E. D. C. 2155.

C. Bengal; Simdribuns.

A robust herbaceous undershrub, 8-4 feet high. *Beng.*
Bhil-jhanjhan.

436. CROTALARIA BSBICKA **Walt.**; F. L. iii. 278; F. B. I. ii. 75;
E. D. c. 21:V7.

Chota Nagpur; N. and E. Bengal; Chittagong.

A robust herbaceous undershrub, 4 feet high. *Beng.*
Pipali-jhanjhan.

437. CROTALARIA KYBORENSIS **Both**; F. B. I. ii. 70. (*often*
lancea F. I. iii. 264. *fi* *tiolo,*

C. and W. Bengal; Chota Nagpur.

A much-branched herb; stems 1-2 feet, with long
spreading limbs. *ref. v* *ol*

438. CROTALARIA LISILLA **Heyne**; F. B. I. ii. 70.

I Sehar.

A small herb, with stiff prostrate stems.

439. CROTALARIA UIRTA **Willd.**; F. B. L. ii. 70. (*ane*
F. I. iii. 268. *rd*

W. Bengal; Behar,

A diffuse annual herb!). *gs,* *n*

440. CROTALARIA VLHILII **Heyne**; F. B. I. ii. 71. (*C. mor*
F. I. iii. 265. *ile,* *ny-*

Chota Nagpur, common; Behar; N. Bengal

A small undershrub 1-2 feet high. *less* *it a*

441. CROTALARIA NANA **Binn.** *far.* PATULA **Bak.**; F. B. I. ii.
Bengal, but probably introduced from Hunna. *hin.*

An annual, stems 6-8 in. high.

442. CROTALARIA UMDOLU **Liu.** *f.*; F. I. iii. 266; F.
n. 72. *iiur*

Behar; Chota Nagpur.

An annual, steins 8-20in. high.

443. CROTALARIA DUBIA (Jrah.; F. B. I. ii. 78.

Chittagong.

Stems 1-2 feet high, sometimes not branched.

444. CROTALARIA SESSILIFLORA Linn.; F. 13. I. ii. 73.

E. Bengal.

Stems 1-2 feet high.

445. CROTALARIA CALYCINA Schrank ; F. B. I. ii. 72. *C. stricta*
F. I. iii. 265.

Chota Nagpur; Behar; E.Bengal.

Stems 8-20 in. high; calyx denser »-iivnn.il wltli 1MH«.
silky, brown hairs.

446. CROTALARIA GLOBULOSA Wight. *C. yluOuan* 1 .:l>.' 1. ii. 00.

Behar, rare.

A trailing annual, stems 1-2 feet long.

447. CROTALARIA UIRSUTA AVilld.: F. T. iii. 270: F. I.. 1. ii. f,8.

Behar.

Stems 1-2 feet long, diffusc, much branched.

448. CROTALARIA TKICHIOI'HH: v IVnili. : V. B. T. ii. G7.

Hehai* rare.

Stems 1-2 feet lon^r, very sk'inkT, IIUK-II DiaiK-nni.

449. CROTALARIA PROSTRATA Koxb.; F. J. iii. 270; F. B. I. ii. 67;
U. D. C. 2153.

Behar ; Chota Nagpur ; Bengal generally.

A diffuse herb, with slender stems &-20 in. long. *Deng.*
Chhoto-jhanjhan ; *Sanlal.* Nanha or katic* junkha.

450. CROTALARIA ACICULARIS H.iin.: F. B. I. ii. 68.

In all the provinces.

A diffuse herb, with Mmun steins 6-20 in. long.

4¹. CROTALARIA FERRUOINEA Grah.; F. B. I. ii. 68.

Chittagong.

A diffuse herb, with rather stout stems and silky branches.

224. Flemingia iluxb.

Undershrubs or Hhrubs, erect or prostrate, rarely herbs; *leaves*
¹foliolate or oftener digitately 3-foliolate, glanddotted beneath;
⁸stipules striate, often deciduous ; stipels 0. *Flowers* spicately or
^{sub}capitately racemose, or paniced; bracts large foliaceous, or
^{liarrow} striate, persistent or caducous; bractcoles 0. *Sepal**

connate in a very short tube ; teeth 5, lanceolate, subequal or the lowest longest. *Petals* slightly or hardly exerted, subequal in length ; standard obovate or orbicular, 2-auriculate at base ; wing³ obliquely obovate or oblong, adnate to the straight or incurved obtuse or acute keel. *Stamens* 10, the vexillary filament free, the rest connate; anthers uniform. *Ovary* sessile, short, 2-ovuled; style filiform or slightly thickened upwards, beardless; stigma terminal, capitate. *Fruit* a small oblong turgid, usually 2-seeded pod, continuous within. *Seeds* rather thick, not strophic late; hilum small.

Bracts large, persistent:—

Leaves simple; flowers in small cymes, each hidden by a broad⁴? cordate folded membranous bract; cymes in copious panicles in t⁵e axilla of leaves and at the ends of branches:—

Axis of racemes zigzag; bracts hardly broader than long:—

Erect shrubs, 5-10 feet high; leaves oblong or ovate-lanceol⁶ rounded at the base; bracts 1⁷ in. long:—

Lateral nerves all subequal, 8-10 pairs; bracts 1 in., finely puberulous, usually all obscurely cuspidate, sometimes M highest slightly emarginate.....*utrolrifera*.

Later, *1 nerves 4-6 pairs, the basal pair longer, stronger and more oblique than the rest; bracts *75 in., softly hirsute with long hairs, usually all slightly emarginate, sometimes the lowest⁸ obscurely cuspidate.....*brqetenti*.

Low shrubs, 1-3 feet high; leaves lanceolate with cuneate base ; bracts *4 in. long, softly pubescent with long spreading white hairs, all emarginate.....*luminalis*.

Axis of racemes straight; erect shrubs, 5-10 feet high; leaves rounded cordate; bracts deeply emarginate, firm, much broader than long

Chappar.*

Leaves digitately 3-foliolate; flowers in dense globose heads surrounded by a ring of lanceolate acuminate scarious bracts.....*invlueratn*.

Bracts small, caducous: —

Leaves simple, thin; flowers in lax panicles single or fascicled in leaf-axils and thyrsoid at ends of branches*...jumatdda*.

Leaves digitately 3-foliolate:—

Flowers in copious axillary and terminal lax panicles; leaflets oblanceolate-oblong, obtuse, deeply plicate.....*lineata*.

Flowers in dense subspicate axillary racemes; leaflets acute:—

"Erect woody shrubs with distinct alwYeground steins: [p. 377]

• Bracts rigidly senrimu: leaflets long-acuuiinatu :— (p. 877J

Branches and stems distinctly 3-angled; bracts much exceeding the buds.....*stricta*.
 Branches rounded, stems slightly 3-cornered; bracts hardly exceeding the buds.....*prtecox*.
 f Bracts herbaceous; leaflets abruptly pointed or shortly acuminate :—[p. 376J

Racemes as long as leaves, petioles winged.....*semialata*.

Racemes shorter than petioles, which are not winged:—

Bracts and calyx sparsely grey-silky ; shrubs, 5-10 feet high
congetta.

Bracts and calyx adpressed-tawny-pubescent; diffuse undershrubs, 1-1-5 feet high.....*prostrata*.

'Dwarf shrubs with thick subterranean woody stems ; leaflets very large, petioles very long fp. 370] *nuna*.

452. FLEMINGIA STROBILIFERA It. Br.; F. B. I. ii. 227; E. I. F. 6G4. *Hedymrum utrobiliferum* F. I. iii. 350.

Chota Nagpur; W. Bengal; Chittagong.

An erect shrub. *Santal*. Sim-busak.

453. FLEMINGIA BRACKETATA Wight. *F. strobilifera* var. *bracketata* F. B. I. ii. 227. *Hedymrum bracteatum* F. I. iii. 851.

Chota Nagpur.

An erect shrub.

454. FLEMINGIA FLUMINAUS Clarke.

Chittagong.

An undershrub.

455. FLEMINGIA CHAPPAR Ham.; F. B. I. ii. 227.

W. Bengal; Chota Nagpur; Orissa.

An erect shrub.

456. FLEMINGIA INVOLUCRATA Benin.; F. B. I. ii. 227.

E. Bengal, Mymensingh.

A small erect shrub.

457. FLEMINGIA PANICULATA Wall.; F. B. I. ii. 227.

W. Bengal; Chota Nagpur.

An erect shrub.

468. FLEMINGIA LINEATA Roxb.; F. I. iii. 841; F. B. I. ii. 228.

W. Bengal.

An erect shrub.

459. FLEMINGIA STRICTA Koxb.; F. I. iii. 842; F. B. I. ii. 228.

Chota Nagpur; Chittagong.

A small shrub.

460. FLEMINGIA PRACOX C. B. Clarke.

Chittagong.

A shrub.

461. FLEMINGIA SEMIALATA Roxb.; F. I. iii- 330.

var. *semialata* F. B. I. ii. 229 partly.

Chota Nagpur.

A shrub, 5-10 feet high. *Santal*. Bir but.

462. FLEMINGIA CONGESTA Roxb.; F. I. iii. 340; F.

E. D. P. 633.

N. Bengal; Chittagong; Tirhut.

A tall shrub. *Vernac*. Bara-salphan, bhaha.

463. FLEMINGIA PROSTRATA Roxb.; F. I. iii. 338.

var. *semialata* F. B. I. ii. 229 partly.

Chota Nagpur; N. Bengal; E. Bengal; Tipper*.

A diffuse, suberect or prostrate shrub.

464. FLEMINGIA NANA Roxb.; F. I. iii. 339.

nana F. B. I. ii. 229 partly.

W. Bengal; Chota Nagpur.

Dwarf, with underground steins emitting

jungle-fires. *Santal*. Of murup.

225. Eriosema DC.

Shrubs or herbs, mostly suberect, with 1-3-foliolate pinnate leaves⁸ rather inconspicuously gland-dotted beneath; stipules free or connate opposite the petiole, lanceolate. Flowers axillary racemed, solitary or geminate along the rachis, occasionally axillary solitary. Sepals connate in a campanulate tube; lobes 5, as long as the tube, subequal, or the two upper rather shorter and subconnate. Petals somewhat exserted; standard obovate or oblong, auriculate at the base; wings narrow, as long as the obtuse incurved keel and shorter than the standard. Stamens 10, vexillary filament free, the rest connate; anthers uniform. Ovary sessile, 2-ovuled; style filiform, beardless; stigma terminal capitate. Fruity an oblong somewhat compressed pod, 1-2-seeded, continuous within. Seed compressed oblique, without strophiole; funicle attached to the end of a linear hilum.

465. ERIOSEMA CHINENSE Vog.; F. B. I. ii. 219; E. T. B. 325.

Chota Nagpur.

A small shrubby plant, with slender stems from a perennial woody stock. *Santal*. Konden.

226. *Gyllista* Ait.

A twining undershrub or shrub; leaves pinnately 3-foliolate, dotted beneath with resinous glands; stipules lanceolate, deciduous; stipeis long subulate, persistent. Flowers axillary cernose, pedicels short; bracts membranous, hyaline, large, deciduous. Sepals connate in a campanulate tube, lobes obtuse, scarious, enlarging; lowest largest, concave, the lateral pair much shorter than the two upper almost completely connate in an emarginate lip. Petals included, subequal in length; standard suborbicular auriculate at the base; wings narrow; keel incurved, obtuse. Stamens 10, vexillary filament free, the others 5 anthers uniform. Ovary sessile, 1-ovuled; style long; stigma terminal capitate. Fruit a small, oblique pod, closed in the calyx, 1-seeded. Seed not strophiolate.

⁴⁶⁶ CYUSTA SCARIOSA Ait.; F. I. iii. 320; F. B. I. ii. 219.

Behar; W. Bengal; C. Bengal.

A woody climber.

227. *Rhynchosia* Lour.

Twining or erect herbs or shrubs; leaves pinnately rarely subpinnately 3-foliolate, dotted with resinous glands beneath; stipules ovate or lanceolate; stipeis long subulate, or minute or 0. Flowers axillary, single or paired on the rachis of a raceme, rarely solitary; deciduous; bracteoles 0. Sepals united in a short tube, lobes as tube or exceeding it, not or very rarely slightly enlarged in fruit but the two upper more or less connate, petals free or exserted, subequal in length; standard obovate or orbicular, spreading or reflexed, base auriculate; wings narrow, incurved, hardly beaked. Stamen 10, vexillary filament free, connate; anthers uniform. Ovary sessile, 2-ovuled; style incurved filiform or thickened, beardless, terminal capitate. Fruit a slightly or much compressed (oblong or round) continuous or septate within. Seeds 2, rarely impressed orbicular or subreniform; hilum lateral short; funicle central; strophiole present or 0.

lobes broad, obtuse, distinct, enlarged; stems suberect woody shrubby; *rufescens*.

Calyx lobes narrow, lanceolate-acuminate or setaceous:—

[*Rhynchosia*.

- Seeds arillate:—
 Dwarf undershrubs with flowers in peduncled pairs, Petioles shorter than the petioles; pod turgid, downy, at length glabrescent between the seeds.
 Trailing herbs with flowers in close many-flowered racemes longer than the leaves; pod subcompressed, thin spreading hairs, faintly lineate between the seeds.
 Seeds not arillate; twining herbs or shrubs; pods turgid
 Leaflets small, obtuse; pod glabrescent, slightly recurved.
Slender.....
 Leaflets large, acute; pod pubescent or downy, rather short:—
 Pubescence minutely glandular, not hoary, end-leaflet acute; lower calyx-tooth not exceeding the tube; pod finely pubescent.
 Pubescence hoary, not glandular; end-leaflet rounded.
 Lower calyx-tooth not exceeding tube ; pod finely pubescent
 Lower calyx-tooth exceeding tube ; pod minutely pubescent

467. RHYNCHOSIA RUFESCENS DC.; F. B. I. 220.

W. Bengal; C. Bengal; E. Bengal.

A shrubby species with long trailing shoots.

468. RHYNCHOSIA CANA DC.; F. B. I. ii. 222.

Behar.

A small undershrub.

469. RHYNCHOSIA CAPITATA DC. *R. aurea* F. B. I. 221

partly.

Behar.

A wide-trailing herb.

470. RHYNCHOSIA MINIMA DC. var. LAXIFLORA Bak.; F. B. I.

ii. 223; E. D. E. 346.

Chota Nagpur; Behar; W. Bengal.

A wide-trailing annual with very slender stems.

Baunhran.

471. RHYNCHOSIA VISCOSA DC.; F. B. I. ii. 225. *Dolichos g*

nosus F. I. iii. 312.

C. Bengal.

A wide-spreading climber with almost woody branches.

Beng. Shim-bhatraji.

475. DUNBARIA CIRCINALIS Bak.; F. B. I. ii. 219*

N. Bengal, Duars.

A slender woody climber.

476. DUNBARIA CONSPERSA Benth.; F. B. I. ii. 218.

N. Bengal, Duars.

A twining herb with very slender stems.

229. Atylosia W. & A.

Herbs or shrubs, twining or erect; *leaves* pinnately subdigitately 3-foliolate; leaflets with resinous stipules lanceolate or setaceous, deciduous or not; *flowers* axillary fascicled, or in clustered racemes axillary peduncles, occasionally the uppermost dense bracts usually large membranous caducous; bracteoles 5, connate in a rather short tube; lobes longer or shorter than the tube, lanceolate-acuminate, the lowest longest, the upper in an entire or 2-toothed lip. *Petals* exserted, sometimes standard orbicular 2-auriculate at base; wings oblique or oblong; keel somewhat curved, obtuse. *Stamens* filament free, the rest connate in a sheath; anther *Ovary* sessile; ovules 3 or more; style filiform or slightly inflexed in the middle, beardless; stigma terminal *Frwit* a linear or oblong pod, septate within; valves or obliquely depressed between the seeds. *Seeds* ovate or conspicuously strophiolate.

Petals falling before the pod develops:—

Flowers many, in long-peduncled racemes; leaflets minute leaf-rachis produced beyond lateral pair; pods with con narrowed at both ends, densely clothed with long spreading

Flowers few, shortly peduncled; leaflets without stipels; at both ends:—

Rachis of leaf distinctly produced; pod lineate, flat, clothed with fine short deciduous hairs.

Rachis of leaf hardly produced; pod with convex faces, lineate, clothed with fine spreading silky hairs.

Petals persisting till the pod is developed; flowers in lax racemes; pod with convex faces, distinctly lineate.

477. ATYLOSIA BARBATA Bak.; F. B. I. ii. 216.

E. Bengal; Chittagong.

A woody climber.

LEGUMINOSM.

Dysolobium.]

478. ATYLOSIA PLATYCARPA Benth.; F. B. I. "• ^◇
 ^ora F. B. I. ii. 212.
 Behar; Chota Nagpur.
 A herbaceous climber. - .. ^15 Dolichos

479. ATYLOSIA SCARAB/EOIDES Benth.; F. B. I. n.
scarahcsoides F. I. ill. 315 ; E. D. B. 34/.

General.

A herbaceous biennial climber. *Beng. Banur kalai*

480. ATYLOSIA CRASSA Prain. *A. moUis* F. B. I. ii. 213 *ra' t'iy.*
 Behar; Chota Nagpur.
 A woody climber.

230. *Cajanus* DC.

Erect shrubs; leaves pinnately 3-foliolate, leaflets with = t e
 resinous gland, beneath; stipules small, lanceolate deci 3 ;
 stipels 0. flowers scattered on the ractus of axillary peduncled
 kernes; bracts caducous; bracteoles 0. Sepal* 5, connate in a
 ca*panulate tube; lobes short, acute or ^f. nate, the two upper
 co»nate in a 2-toothed lip. Petals exserted; standard orbicular,
 2-auricuUte at base ; wings obliquely obovate; ^ obtuse, incurved
 at tip. Stamen, 10; vexillary filament free, the rest connate^{taa}
 shea«»»; anthers uniform. 0«ary subsessile; ovu e few ; style
 long. somewhat thickened in upper half, beardless; stigm a some-
 what oblige, capitate. Fruit a linear, flat, ^ f ^ outside
 cont;nuom within; valves with depressed oblique 1 .., oblong
 between the seeds, fiwb somewhat compressed, wtl
 lateral hilum; strophiole 0. .. o1»» . ^ p. O. 49.

481. CMAKTO INDICUS Spreng.; F. B. I. "• 217, EJ>

Cytisus Cajan F. I. iii. 325.

Cultivated everywhere. *Pea*, or pigeon-
 An erect shrub. *Vernac.* Arhar. J-ne
 Pea.

231. *Dysolobium* Prain.

Tinners, sometimes large, usually woody; I^wj' pinnately tri-
 fo^ t e ; leaflets not glandular beneath; stipules p an. ceolate, basi-
 flacu, sometimes deciduous; stipels subulate, P ^ 6 ^ , , incon-
 cop'ous axillary racemes; bracts and ^ a of c f | e s . X , lowest lobe
 spicuous. Sepals 5, connate in a campanulate **»> . e, the two
 lanceolate, exceeding the rest but shorter than the tub

[*Dysolobium*.

upper connate entire or emarginate. *Petals* exserted orbicular, subauriculate at base; wings oblong, middle to the beaked, sometimes curved and laterally *Stamens* 10; vexillary filament free, the rest connate in anthers uniform. *Ovary* sessile, many-ovuled; bearded longitudinally or caespitously below the *Fruit* a thick woody subterete pod, villous markedly septate with double partitions within. *Seeds* velvety or hirsute; hilum lateral, small or oblong; strop

Eacemes lax, long-peduncled, flowers large; pods closely seeds sparsely velvety; pod keeled along the suture but not Leaflets rounded, cuspidate, chartaceous, hirsute on nerves flowers 1-75 in. long; keel with a long laterally deflexed bearded down the face. Leaflets narrowed to apex, membranous, glabrescent; long; beak of keel not deflexed; style penicillate round the

Bacemes dense, short-peduncled, flowers small, -3 in. long or softly hirsute with long hairs; seeds densely velvety; beak deflexed:—

Leaflets roundish cuspidate; pod neither keeled nor winged the angles. Leaflets lanceolate; pod subquadrangular, prominently winged along the angles.

- 482. DYSOLOBIUM GRANDE Prain. *Phaseolus velutinus* ii. 204. N. Bengal, Duars. A large woody climber.
- 483. DYSOLOBIUM LUCENS Prain. *Vigna lucens* F. B. I. Chittagong. A large woody climber.
- 484. DYSOLOBIUM DOLICHOIDES Prain. *Phaseolus dolichoides* F. I. iii. 290. *Vigna dolichoides* F. B. I. ii. 206. Chittagong. A large climber.
- 485. DYSOLOBIUM TETRAGONUM Prain. *PsopJiocarpuss* N. Bengal, Duars. A slender climber.

Stipules oblong ; leaflets shortly 3-lobed, the central lobe late; stems almost glabrous.
 Stipules lanceolate; leaflets deeply 3-lobed or dissected, the lobe ligulate ; stems hirsute.
 Pod somewhat compressed; seeds subtruncate at twining, or in some cultivated forms of *P. calcaratus** erect subspicate; leaflets as long as petioles or longer:—[p. 385]
 Flowers medium; seeds with a centric hilum.
 Flowers larger; seeds with hilum nearer one end
 *Pods hirsute or pubescent, slightly compressed; capitate :—[p. 385]
 Stems and pods densely beset with rusty hairs; pods septate between the seeds; stems always twining.
 Stems and pods sparsely beset with grey tomentum; pods septate between the seeds :—

- Pods erect or suberect:—
 - Seeds black; stems subscaudent
 - Seeds grey; stems diffuse. *Mumjo* var.
- Pods spreading or reflexed:—
 - Seeds green; leaves dark-green; pods spreading horizontally
 - Seeds yellow; leaves pale-green ; pods distinctly reflexed
 - Seeds black; leaves medium-green ; pods spreading horizontally

- 486. PHASEOLUS SEMIERECTUS Linn.; F. B. I. ii- 201.
 C. Bengal.
 A suberect shrubby species.
- 487. PHASEOLUS ADENANTHUS G. F. Mey.; F. B. I. ii- 200;
 E. D. P. 484. *P. alatus* F. I. iii. 288, not of Linn.
 C. Bengal; banks of rivers and village jungles.
 A perennial prostrate or climbing species.
- 488. PHASEOLUS LUNATUS Linn.; F. I. iii. 217; F. B. I. ii. 200;
 E. D. p. 489.
 C. Bengal; Orissa: cultivated."
 A biennial or annual climbing species.
- 489. PHASEOLUS VULGARIS Linn.; F. I. iii. 287; P. B. L. ii. 200;
 E. D. P. 530.
 Cultivated.

Annual, climbing or suberect. French Bean. *Hind.*

490

Bakla, loba_

- PHASEOLUS MULTIFLORUS Willd.; F. B. I. ii. 200; E. D. P. 493.

Cultivated.

491

^{An} annual climber. The Scarlet Runner.

- ^{HA}PHASEOLUS TRILOBUS Ait.; F. I. iii. 298; F. B. I. ii. 201 ;
^E- D. P. 523.

In all the provinces, wild.

A diffuse trailing herb. *Hind.* Rakhal-kalai, mugáni;

492

P [^] [^] Mus ^{ani} _

- PHASEOLUS ACONITIFOLIUS Jacq.; F. I. iii. 299 : F. B. I. * 202; E. D. P. 468.

Chota Nagpur; Behar; Tirhut: cultivated.

^A diffuse trailing herb. *Hind.* Moth; *Beng.* Kheri;

493

P ^{santal, Moch} > bir-mung.

- PHASEOLUS CALCARATUS Roxb.; F. I. iii. 289; F. B. I. ii. 203 ; E. D. P. 486.

Chota Nagpur; Behar; Tirhut; N. and E. Bengal.

A climber usually; sometimes suberect and short.

494

J [^] ^{Sutri} > ghuru'sh ; *Santal.* Sutri.

- PHASEOLUS RICCIARDIANUS Ten.

Chittagong; cultivated.

A climber.

495.

- PHASEOLUS SUBLOBATUS Roxb.; F. I. iii. 288. P. *trinervius*
^F- B- I. ii. 203 ; E. D. P. 528.

Chota Nagpur ; Western Behar.

A climber. *Beng.* Ghora-mung.

496.

- PHASEOLUS MUNGO Linn.; E. D. P. 496.

In most of the provinces, cultivated.

49

[^] scandent or subscandent herb. *Vernac.* Tikari-kalai.

-6 ^{m2}

Var. ROXBURGHII Prain. P. *radiatus* F. I. iii. 296, not of
kinn. P. *Mungo* var. *radiaius* F. B. I. ii. 203.

In all the provinces, but especially the western ones,
cultivated.

A diffuse but not scandent herb. *Vernac.* Urd, niash-
kalai.

497.

- PHASEOLUS RADIATUS Linn.; E. D. P. 513. P. *Mungo*
^P- I- iii. 292, not of Linn.; F. B. I. ii. 203 partly.

In all the provinces, cultivated.

A suberect herb. *Vernac.* Mung ; hali-mung.

BENGAL PLANTS.

[Phaseolus

497/2. Var. AUREA Prain. *P. miveus* F. I. iii- 29?-
F. B. I. ii. 203, partly.

P. Mungo

In all the provinces, cultivated.
A suberect herb. Vernac. Sona-mung.

497/3. Var. GRANDIS Prain. *P. Max* F. I. iii. 295, not of
P. Mango F. B. I. ii. 203, partly.

- Linn.

In most of the provinces, occasional only-
A suberect or erect herb. Vernac. Krishna-mung-

233. Yigna Savi.

Herbs, rarely undershrubs, twining, rarely suberect;
pinnately 3-foliolate, leaflets eglandular; stipules lanceolate, basifixed, rarely peltately attached; stipels
Flowers fasciculately racemed, peduncles axillary with
nodose; bracts and bracteoles small, deciduous. *Sepals* 5,
in a campanulate tube; lowest tooth longer than the
times exceeding the tube, 2 upper subconnate or free.
exserted; standard orbicular, auriculate at base; wings
oblong, rather shorter than standard, slightly adnate to the
keel about as long as wings, acute but with the beak not
a complete spiral, or obtuse. *Stamens* 10; vexillary filament
the rest connate in a sheath; anthers uniform. *Ovary*
many-ovuled; style filiform or thickened or dilated upwards
tudinally bearded below the oblique or introrse stigma.
linear subterete pod, the chamber occluded between the
Seeds reniform or subquadrate, smooth; hilum short latera
Btrophiole 0.

Keel prolonged into a distinct beak —

Flowers large (1-1.25 in.) purple; pods thinly silky at length
cent.

Flowers medium (0 in. or 0 in.); **ersistently pilose** :-

Flowers reddish; hairs on pods and stems spreading
Flowers yellow; hairs on pods adpressed, those on stems reflexed

Clarke*

Keel not beaked; pods glabrous —

Stipules basifixed; pods short, **0-12-seeded**; a wild littoral specif
with twining stems and yellow flowers

UtteoW'

12-30-seeded; widely culti-

v

or yellowish flowers :-

Stems suberect; pods with short spaces between the seeds...Catjang.
stem vntag ; pods with very long intervals Wj in the seeds
Ca ng var. sinensis.

4^«. VIONA VEXILLATA Beiith.; F. B. I. ii. 206.

Behar; Chota Nagpur. neren nial fusiform
A climbing or trailing species with perennial
rootstock and herbaceous steins.

«9. VK«A PILOSA Bale.; F. B. I. B. 207; E. »• v - ^
Dolichos jiilosus F. I. iii. 312.

H S f with .lender rigid stems. * * • ^ ^
malkonia.

500. VIGNA CLARKEI Prain.

N. Bengal, Duars.
A climber with slender rigid stems.

501. VZGNA LUTEOLA Benth.; P. B. L ii. 205. Dohchos gan.
geticus F. I. iii. 310.

Sundribuns.
A twining or trailing littoral species.

502. VIGNA CATLO BndL; P- B. I. ii. 205; E. D. V. UB
DoUchos Catjang F. I. iii. 303.

In all the provinces, cultivated. Barbati ;
A suberect herb. Hind. Lobia, ransa; ^ ^ .
Santal. Ghangra. - * 302.

5°2/2. Var. SINENSIS Prain. DoZic/tos sinensis F. 1. m
In all the provinces, cultivated.
A climbing herb.

234. Pachyrhizus Bich.

We herbaceous twiners with great tuberous rootstocks;
Pinnately 3-oliolate; leaflets lobed, glandular, stipules
olate, basiLed; stipels subulate. Fbwer. i°*°* }ff; and
J'»M nodes of long axillary peduncled racemes;; bra in a
teole, small setaceous) caducous. Sq «* 5' ^ o a n a t e
Panulate tube; 3 lower teeth subequal acute, 2 upper o dard
in an emarginate lip. P<jteZs muoh exited, subequal ^, an ^
w.
14«. obovate, 2-auriculate at base; wings oblong, m the ^ ^
ved, obtuse. Siemens 10 j vexillary falament taè ^ many-
Conn*te in a sheath anthers uniform. Ovary sessile,

[*Pachyrhizus*.

ovuled; style somewhat thickened and subcircinar^{e u p ^ . ^} longitudinally bearded below the introrse globose stigma. ^{valve} a linear turgid pod, occluded but not truly septate within, ^{sub-}externally depressed between the seeds. *Seeds* ovate or orbicular compressed; hilum small; strophiole 0. [^] p.

503. PACHYRHIZUS ANGULATUS Eich.; F. B. I. n\ 207; . .

P. 1. *Dolichos bulbosus* F. I. iii. 309.

Cultivated, fairly generally. ^{large}

A climber with somewhat woody stems, ana a tuberos root. *Beng.* Sankalu.

235. *Dolichos* Linn.

Herbs or undershrubs, twining prostrate or suberect; ^{leaV ^ pin-} nately 3-foliolate, leaflets eglandular; stipules small, ^{subP^{er} ^ S} stipels subulate. *Flowers* axillary, solitary or fascicled, or fas [^] lately racemed on axillary peduncles with nodes tumid or i [^] bracts and bracteoles minute, subpersistent. *Sepals* 5, connate ^{-er} a campanulate tube; lobes very short, usually obtuse, the 2 up ^{F ^} connate in an entire or emarginate very short lip. *Petals* m [^] exerted, usually subequal; standard orbicular, auriculate at [^] wings falcate, obovate, acnate to keel; keel much incurved, o ^{free,} beaked, beak straight. *Stamens* 10; vexillary filament [^] thickened or -; ppendaged at base, the others connate in a shea [^] anthers uniform. *Ovary* subsessile, many-ovuled; style thick [^] upwards and bearded longitudinally down the front, or fin [^] and bearded round the terminal stigma. *Fruit* a flat ^{linear} oblong recurved pod, continuous within. *Seeds* thick or ^{fat ^ eII ^} hilum short with slender funicle or elongated and covered by thickened subpersistent apex of funicle.

Style clavate, thickened upwards, bearded along the inner face; P^o ^d oblong recurved, 2-4-seeded:—

Pods tapering to the apex; seeds with long axis parallel to the sutu[^]

Pods abruptly truncated at apex; seeds with long axis across the V^{od} [^]
*Lablahw.IHI**¹⁰*¹¹''

Style filiform throughout, penicillate round the stigma; pods linear:-

Pods recurved, few-seeded; flowers 1-3, axillary. ^{^ ^}
Pods straight or nearly so, many-seeded; flowers numerous, *
peduncled racemes. ^{mbcarno *u *m}

504. DOLICHOS LABLAB Linn. ; F. B. I. ii. 209 partly. *D. tignosits* F. I. iii. 307, not of Linn.
In all the provinces, cultivated.
Beng. Shim.
- 504/2. Vav. LIGNOSUS Prain. *D. Lablab* F. I. iii. 305, not of Linn.; F. B. I. ii. 209 partly.
In all the provinces, cultivated.
Beng. Shim.
005. DOLICHOS BIFLORUS Linn.; F. I. iii. 313; F. B. I. ii. 210.
Behar; Chota Nagpur.
A suberect or trailing or twining annual.
Hind. Kulti; *Beng.* Kurti-kalai; *Santal.* Horec'.
006. DOLICHOS SUBCARNOSUS W. & A.; F. B. I. ii. 211.
Chittagong, cultivated.
A climber.

236. Psophocarpus Neck.

Twining herbs, with large tuberous roots; *leaves* pinnately 3-foliolate; leaflets eglandular; stipules membranous, peltately ^{ed} ^{sti} Pules subulate. *Flowers* rather showy, fasciculately racemose. Awards the apex of axillary peduncles, nodes of rachis ^{um} ^d; bracts small caducous; bractcoles larger, subsistent. ^{pah} 5, connate in a campanulate tube; lowest lobe shorter ^{tub} ^{lateral} ^u ^{pp} ^{er} ² connate, emarginate or bifid, all shorter than ^e ¹ *Petals* exserted; standard suborbicular; wings obliquely ^{ob} ^o ^{vate}; keel incurved at apex, obtuse. *Stamens* 10; vexillary ^{filam} ^{rest} ¹¹⁶¹¹ * free below and above in the middle connate with the ^{as} ^a ^{tube}; anthers uniform. *Ovary* substipitate, many-^{ovuled} ^{suk} ¹; *Style* long ^{thi} ^{ckened} above ovary, laterally compressed, ^{Ulate} [>] much incurved, densely peniculate round the terminal ^{ab} ^{terminal} globose stigma. *Fruit* a 4-angled pod with each ⁸ [~] distinctly winged, septate between the seeds. *Seeds* transversely ^{ob} ^{long}; hilum lateral oblong; strophiole 0.

507. PSOPHOCARPUS TETRAGONOLOBUS DC. J F. B. I. ii. 211,

olichos tetragonolohus F. I. iii. 305.

Chittagong.

A slender annual climber.

237. Dumasia DC.

Twining herbs; *leaves* pinnately 3-foliolate; leaflets eglandular; ^{8ti} ^{Pules} setaceous or striate; stipules subulate. *Flowers* solitary

or paired on the rachis of an axillary raceme; bracts narrow; bracteoles minute. *Sepals* 5, connate in a cylindrical tube, gibbous at the base behind; limb obliquely truncate, teeth obsolete. *P**^{td}*** exerted, subequal; standard erect obovate, very slightly inflexed; auriculate at base; wings falcate-obovate, adnate to keel; keel obtuse, slightly incurved. *Stamens* 10; vexillary filament free; the rest connate in a sheath; anthers uniform. *Ovary* substipitate, many-ovuled; style erect and filiform below, dilated above the middle, the top subulate inflexed, beardless; stigma terminal¹ capitate. *Fruit* a linear falcate pod, compressed, continuous within, torulose opposite the seeds. *Seeds* subglobose; strophiole u-

508. DUMASIA VILLOSA DC.; F. B. I. ii. 183.

Chota Nagpur, Parasnath.

A slender climber.

238. *Glycine* Linn.

Herbs, suberect or twining; *leaves* pinnately 3-7-foliolate; stipules small; stipels subulate. *Flowers* in axillary racemes solitary or fascicled on the rachis; bracts small, setaceous; bracteoles minute. *Sepals* 5, connate in a campanulate tube, lobes equally distinct, or the two upper connate at the base or $\frac{1}{2}$ half their length. *Petals* little exerted; standard suborbiculate¹ hardly auriculate at base; wings narrow, slightly adnate to keel; keel obtuse, shorter than wings. *Stamens* 10, all connate, or the vexillary filament at length partially or quite free; anthers uniform. *Ovary* sessile, many-ovuled; style short, incurved, beardless; stigma terminal capitate. *Fruit* a compressed or at length subterete, linear or falcate pod, spongily septate between the seeds. *Seeds* without strophiole.

509. GLYCINE HISPIDA Maxim. *G. Soja* F. B. I. ii. 184, not of Sieb. & Zucc. *Dolichos Soja* F. I. iii. 314.

W. Bengal, cultivated occasionally.

A suberect annual. *Beng.* Gari-kalai; *Hind.* Bhat, ram kurthi; *Santal.* Hende disom horec'; pond disom horec'.

239. *Teramnus* Sw.

Twining herbs with slender stems; *leaves* pinnately 3-foliolate, leaflets eglandular; stipules small; stipels subulate. *Flowers* small, few, axillary fascicled or paired, or fascicled on the rachis of axillary racemes; bracts small; bracteoles linear or lanceolate,

striate. *Sepals* 5, connate in a small campanulate tube; lobes ^{su}equal or the 2 upper shorter and distinct, or the 2 upper ⁱⁿinnate. *Petals* little exserted; standard obovate, narrowed at ^{the}base, not appendaged; wings narrow, adnate to keel; keel ^{sh}shorter than wings, almost straight, obtuse. *Stamens* 10, connate ^{**}a tube; anthers alternately perfect and very small sterile. ^{Ov}ary sessile, many-ovuled; style short, thick, curved, beardless; ^{sti}gma terminal, capitate. *Fruit* a linear flattish pod, septate ^{Wlfch}in, tipped by the hooked persistent style. *Seeds* slightly oblong; hilum lateral small; strophiole 0.

Leaflets small, acute or subobtuse; racemes elongated, usually stalked \—

Leaflets membranous, sparsely hirsute; calyx-teeth as long as tube *labialis*.

Leaflets subcoriaceous, densely pubescent beneath; calyx-teeth shorter than tube. *debilis*.

Leaflets ^{la}acuminate or acute; racemes congested, sessile; ^{cal}yx-teeth shorter than tube. *Jexth**

⁵10. TERAMNUS LABIALIS Spreng.; F. B. I. ii. 184. *Glycine labialis* F. I. iii. 318.

In all the provinces.

A slender twining species.

^{5U} - TERAMNUS DEBILIS Prain. *T. labialis* var. *mollis* l. B. 1. 184. *Glycine delilis* F. I. iii. 318.

C. and E. Bengal.

A slender twining species.

Beng. Mashani.

^p_{o12} - TERAMNUS FLEXILIS Benth.; F. B. I-ii- 185- Sundribuns; Chittagong.

A rather robust twining species.

240. Canavalia DC.

^{Lar}ge twining or prostrate herbs; *leaves* pinnately 5-foliate, glandular; stipules small, sometimes wart-like or obsolete; ^{Stl}*Pels* subulate. *Flowers* showy, in elongated peduncled ^{BJOUBIJ}racemes, fasciated on a nodose rachis; bracts minute; ^racemes ^{ad}obovate; ^{ou}s. *Sepals* 5, connate in a tube; limb oblique 2-lobed; ^{Hp}projecting entire or emarginate, lower shortly ^oobovate, much smaller. *Petals* much exserted; standard large ^{Sub}orbiculate reflexed; wings narrow, free from the wider obtuse or

long as tube, lateral lobes shorter, lowest rather longer than upper lip. *petal* somewhat exserted; standard orbicular or pte, reflexed, auriculate at the base; wings obovate or oblong, from the somewhat shorter, incurved, beaked or obtuse keel. *Mnms* 10; vexillary filament free below, connate from the middle *¹th the rest, its anther perfect; anthers of the sheatii uniform or ^{alt}emately perfect and much shorter sterile. *Ovary* sessile, or more-ovuled; style incurved, beardless; stigma terminal, ^{Ca}pitate. *Fruit* a linear or oblong pod, few-seeded, flattened or ^{*f}gled along the upper suture, occluded but not septate between ^bseeds. *Seeds* somewhat compressed; hilum short or linear; ^{*tr}ophiole.

⁵¹?- BIOCLEA JAVANICA Benth. *D. reflexa* F. B. I. ii. 196

Partly. (*Dolichos hexandra* Boxb.)

Chittagong.

A rather slender woody climber.

242. Pueraria DC.

fining or diffuse shrubs or herbs; *leaves* pinnately 3-foliolate; ^{le}lets glandular, sometimes lobed palmately; stipules herbaceous, ^u*% basifixed, occasionally peltately attached; stipels subulate. ^{Fr}uits ^{to}ers purplish or blue, densely fasciculately racemose on long ^{axi}lary peduncles, or subpaniculate near ends of branches; rachis ^{nod}ose, nodes sometimes produced; bracts ^{smt}l, deciduous; ^{ra}cteole 4 small subsistent, or minute and caducous. *Sepals* ^onnate in a campanulate tube; teeth short or long, the 2 upper ^ounate in an entire or 2-lobed lip. *Petals* distinctly exserted; ^dard obovate or suborbicular, auriculate at base; wings narrow, ^{oblou}g or falcate, about as long as and adnate in the middle to the ^{straigh} curved keel. *Stamens* 10; vexillary filament free at ^{the base} connate in the middle with the rest, rarely quite free, ^{anthers} uniform. *Ovary* sessile, many-ovuled; style ^{falio} inflexed above, beardless; stigma terminal ^{capitate}. ^{Fru}* ^{linea} ^{flattish} Pod, continuous or occluded or septate. *Seed** ²: ^u ^{sh} Orbicular or transversely oblong; hilum shortly oblong, ^{lo}phiole small, sometimes obsolete.

^{?low} «s produced when the plant is leafless; leaflets enfee; pod wide ⁷ somewhat constricted along the sutures between the seeds, ^P

[*Pueraria*.

- Calyx silky ; teeth subobtuse, shorter than tube ; bracts buds ; pods bristly.....
- Calyx subglabrous; teeth acute, as long as tube; bracts buds; pods almost glabrous.....
- "Flowers produced along with the leaves; leaflets more or less pod narrow, somewhat turgid, sutures straight, tip recurved.....
- Leaflets shallow-lobed; flowers *5 in. long ; sutures of subcy not thickened.....
- Leaflets deeply lobed, larger ; flowers 1 in. long; sutures distinctly thickened, pods broader than thick.....

518. PUERARIA TUBEROSA DC. ; F. B. I. ii. 197 ; E. D-

Hedysarum tuberosum F. I. iii. 363.

Chota Nagpur ; Orissa.

A shrubby climber, with a large tuberous root and *Santal*. Tirra, patral khonda ; *Beng*. Shinna

519. PUERARIA CANDOLLEI Grah.; F. B. I. ii. 197.

Chittagong.

A shrubby climber.

520. PUERARIA PHASEOLOIDES Benth.; F. B. I.

Dolichopliaseoloides F. I. iii. 316.

N. Bengal; E. Bengal.

An extensive climber.

521. PUERARIA SUBSPICATA Benth. P. *phaseoloides*

ii. 199 partly.

N. Bengal; Chittagong.

An extensive climber.

243. Galactia P. Br.

Prostrate or twining herbs; leaves 3-foliolate ; stipules deciduous ; stipels subulate. Flowers in axillary racemes, paired or fascicled on the swollen nodes of the bracts setaceous ; bracteoles minute. Sepals 5, connate in a tube ; teeth lanceolate or linear, the 2 upper connate in an lip ; buets acuminate. Petals not much exerted, about equal length ; standard ovate or orbicular, faintly auriculate at wings narrow, adnate to the obtuse almost straight keel. 10; vexillary filament free, connate in the middle with the anthers uniform. Ovary sessile, many-ovuled; style filiform, beardless; stigma terminal, capitate. Fruit usually recurved, flattened pod, occluded or subseptate between the seeds. Seeds somewhat compressed ; strophiole 0.

55 & GAJACTIA TENUIFLORA W. & A.; F. B. I. ii. 192. *Glycine tenuijtora* F. I. iiL 319.

Western Behar.

A slender twining herb.

var. *villom* has been obtained within our area, and it appears to be very rare.

244. Grona Lour.

Twining herbs; leaves 1-foliolate; stipules caducous; stipels
 s»Wlate. Floivers in axillary or subterminal racemes, 2-3 together
 <* the slightly BWOuennodes of the rachis. Sepals 5, connate in
 a *ort campanulate tube; teeth longer than tube^{t, h^e/, U P * "}
 * o » or less united at the base. Petals exserted; s^tandard o b o ^ e
 «* suborbicular, auriculate at the base; wings falcate, shghUy
 •f nate to keel; keel obtusely beaked, nearly straight. S ~ >
 +0; vexillary filament free, the rest connate; anthers uniform.
 ^y subsessile) many • ovuied; style filiform, beardless ; stigma
 te»ninal capitate. Fruit a linear compressed or somewhat turgrf.
 ** occluded between the seeds. Seeds orbicular; hilum small,
 sl*ophiole distinct.

523- GRONA GRAHAMI Benth.; F. B. I. ii. 191-

Chota Nagpur, Manbhum.

A. lax, slender, trailing species.

245. Erythrina Linn.

Trees, rarely undershrubs, with prickly branches; leaves pin-
 na<*ly 3-foliolate, petioles sometimes prickly; stipules small;
 st^fPeU gland-hke. Flowers red, rarely white, in dens^{^ > i f} infar,
 ^ mes that are axillary but appear before ^ ^ ^ s maU
 P**ea or fascicled on the rachis; bracts smatt, ^{hTM* > •} bft8e
 « 0- SepaU 5, connate in a spathaceous ^ eath spM to the ed
 b(*ind with minutely toothed tip, or in a ^ ^ ^ J ^ o v
 too & less calyx. Petals exserted, very unequal; standardjange
 wide erect or spreading, sessile or long-clawed base n o t ^ n c free.
 wing* very short; keel short, its petals partly connatej ^ ^
 Stans 10; vexillary filament free or connate at o^{ase} Ovary
 r ^ = the others connate to their middle; ^ e / s T ^ ' ; stignm
 ;Vtate, many-ovuled; style incurved subulate at apex^{d tar} ; ing
 ^ inal capitate. Fruit a stipitate, hnear-falcate po^{ond} 1 con-
 at ^ th extremities, seed-bearing throughout or at apex ^{y20}

Erythrina.

stricted or sinuate between the seeds; dehiscence follicular, ^{through} out the dorsal suture or at the apex only. *Seeds* ovate; ^{hilum} lateral oblong; strophiole 0.

Calyx spathaceous oblique, not at all 2-lipped, finally split to ^{base} along the back; tall trees:—

Calyx 5-lobed at the tip; keel-petals free; pod 6-8-seeded, ^{dis} torulose..... ^{clly}

Calyx entire at the tip; keel-petals connate; pod 2-3-seeded, ^h torulose..... ^{stricta.}

Calyx campanulate, more or less distinctly 2-lipped, not splitting base down the back:—

Considerable trees:—

Leaflets as long as broad, pubescent beneath, their margins smooth limb of standard 3-4 times as long as broad; pod turgid ^{ate;}

Leaflets twice as long as broad, glabrous beneath, their margins entire; limb of standard only as long as broad; pod torulose ^{suberosa var. sublobata.}

Herb with annual twigs from a woody rootstock, leaflets entire, as broad..... ^{ovifolia.}

524. ERYTHRINA INDICA Lamk; F. I. iii. 249; F. B. I. ^{1 ft 8"} E. D. E. 342.

Sundribuns, sea-face, wild; elsewhere common but ^{always} planted.

An armed tree, with blackish prickles. *Bevy-* ^{ah t a} mandar; *Hind.* Mandara; *Santal.* Marar bahaL.

525. ERYTHRINA STRICTA Roxb.; F. I. iii. 251; F. B. I. ⁸⁹ E. D. E. 354.

Orissa, Khurda; Chittagong.

An armed tree, with pale prickles. *Uagh.* ^{Katheik;} *Xjriya* Chaldua.

526. ERYTHRINA SUBEROSA Roxb. var. SUBLOBATA Bak.; F. B. ^T u. 190; E. D. E. 356. *E. sublobata* F. I. iii. 254.

Behar; Chota Nagpur; Orissa.

^{<nw} A tree with thick corky bark. *Vriya* Paldua. 527. ERYTHRINA OVALIFOLIA Roxb.; F. I. iii. 254; F. B. I. ^{18y<} C. Bengal.

^{fi00} A tree with many prickles. *Beng.* Hari-kekra. 528. ERYTHRINA RESUPINATA Roxb.; F. I. iii. 257; F. B. ^T ii. 18?).

Chota Nagpur, Parasnath.

A dwarf species, the racemes and annual leafy shoots springing directly from a stout rootstock.

246. Mucuna Adans.

Pere ^{ial} or annua* ^{arS^e} twining shrubs or herbs; *leaves*
^{P^atT*} ^{G^} ^{3-f} ^{io^ate} ; stipules deciduous ; stipels subulate, rarely 0.
^{Floiver} ^{usualy} ^l ^{on^axiH^ai*} purple red or greenish, fasciculately racemed on
^{nodose} ^{Pa7} ^{adhis} » bracts deciduous, large or small; bracteoles small,
^{later} ^l ^{connate} in a widely campanulate tube; lowest tooth long,
^{Bert} ^d ^{shortj} ^{upper} 2 connate in an entire lip. *Petals* much ex-
^{the} ^b ^{standar} (* complicate, shorter than the wings, auriculate at
^{long} ^{as6i} ^{wins} ^s oblong or ovate, usually adiate to keel; keel as
^{Stam} ^{as} or exceeding the wings, incurved, acute or beaked.
^{Plit} ^{en*} ¹⁰; *^{ae} ^{vexi^aiT} filament free, the others connate in a
^{often} ^{s-6ath}, *^{keir} anthers alternately longer basifixeS, and shorter
^{Ov^led} ^{ve^rS} ^{atile} ^{anc^} bearded. *Ovary* sessile, villous, few- or many-
^a ^{wo} ^{od^T} ^{tilic} form beardless ; stigma terminal capitate. *Fruit*
^{beset} ^{w/} tm sm hairs ; externally variously winged or plaited or
^{smooth} ^{WitJln} ^{se} ^{Ptate} or occluded. *Seeds* orbicular with long
^{War} ^{Vl} ^{Um}, or transversely oblong with short hilum ; strophiole 0.

Perenn ^{ing} ^{rou} ^{la!} ^{Wo} ^{Ody} ^{clim} bers; seeds large, flat, with a huge hilum extend-
^{pod} ^s ^{alth} ^{Plaits} across their faces » seeds solitary ; racemes short
^{cor} ^{ymbose}..... *monosperma*.

Pod ^s ^{with} out plaits across their faces, seeds 2-4; racemes long-
^{peduncul} ^{6d)} ^{Umbelliform} *fliiiqntea*.

hilun ^{SabOve} ^{round} annual, seeds small ovoid with a small lateral
^{J!} ^{Pods} ^{turgid}, subrecurved at apex, longitudinally ribbed;
^{raceme} ^s ^{elongated} : -

- Pods** ^{S^{re}y}, covered with pungent deciduous hairs; flowers purple;
- leave** ^s ^{ben} ^{neath} grey-silky..... *prurient*.
- Pods** ^{black}, covered with velvety persistent tomentum :—
- * ^{owers} purple ; leaves beneath grey-silky..... *utilis* -
- * ^{owers} white; leaves beneath glabrescent..... *nivea* "

529 - MUCUNA MONOSPERMA DC.; F. B. I. ii. 185; E. D. M. 781; *Carpo^iogon monospermum* F. I. iii. 283.

[Mucuna.

Tippera; Chittagong.

A large woody climber.

530. MUCUNA GIGANTEA DC.; F. B. I. ii- 186 < *Carpopogon*⁰¹
giganteum F. I. iii. 286.

Sundribuns.

An extensive woody climber, confined to mangrove tidal forests.

531. MUCUNA PRURIENS DC.; F. B. I. ii- 187 > **
Carpopogon pruriens F. I. iii. 283.

In all the provinces; common both on forests and in village jungles.

An annual climber with slender stems. bichchoti; *Hind.* Kivanch, goncha; *Vr**J < **Santal.* Etkā.

532. MUCUNA UTILIS Wall.; F. B. I. ii. 187. western P^{ro}

Occasionally cultivated, especially in the west

An annual climber with slender stems. In plants the racemes are often short and sometimes only 1-2 flowers being produced. Alkushi.

533. MUCUNA NIVEA DC.; F. B. I. ii. 188. *Carpopogo**
 F. I. iii. 285.

Occasionally cultivated.

An annual climber with slender stems. *utilis* are probably only varieties of the same species. Beng. Khamach.

247. Butea Eoxb.

Trees or large woody twiners; leaves pinnately 3-foliolate large; stipules small, caducous; stipels subulate, showy, densely fascicled in axillary or terminal racemes or *Sejyals* 5, connate in a wide campanulate tube; teeth short, the two upper connate in a broad entire or emarginate *Petals* much exserted; standard ovate, acute, recurved appendaged at base; wings falcate, adnate to the acute keel, which equals the standard in length. vexillary filament free, filiform, the rest connate; anthers beardless; stigma terminal, truncate or capitate. Fruit a

oblong, stipules small; flowers small, in large terminal panicles extending from the upper leaf-axils, densely fasciated on the swollen nodes; bracts lanceolate; bracteoles linear, individual racemes; bracts lanceolate; bracteoles linear, connate in a campanulate calyx; teeth lanceolate; petals connate in a lip. Petals exerted, substandard ovate or orbicular obtuse, not appendaged; obliquely oblong, free; keel obtuse, straight. vexillary filament free, the rest connate; anthers uniform. Ovary sessile or stipitate, 2-ovuled; style subulate, stigma terminal capitate. Fruit a firm, tardily splitting along the dorsal suture round the base flat, winglike and empty, seed compressed; hilum small; strophiole 0.

An erect strong climber; lower calyx-teeth lanceolate; flowers nearly as wrge again. fromlosa. superba.

UTEA FBONDOSA Roxb.; F. I. iii. 244; F. B. I. ii. 194; E. D. B. 944.

Behar; ChotaNagpur; W.Bengal.

A considerable tree. Beng. Palas; Hind. Dhak; Santa-L

535 Muru P J Kol. Murut.

UTEA SUPERBA Roxb.; F. I. iii. 247; F. B. I. ii. 195; E. D. B- 978.

Chota Nagpur; W. Bengal; Orissa.

A very heavy climber. Beng. Lata-palas; Hind. Chihunt; Santal. NarLmurup.

248. Spatholobus Hassk.

Stipules small; flowers small, in large terminal panicles extending from the upper leaf-axils, densely fasciated on the swollen nodes; bracts lanceolate; bracteoles linear, individual racemes; bracts lanceolate; bracteoles linear, connate in a campanulate calyx; teeth lanceolate; petals connate in a lip. Petals exerted, substandard ovate or orbicular obtuse, not appendaged; obliquely oblong, free; keel obtuse, straight. vexillary filament free, the rest connate; anthers uniform. Ovary sessile or stipitate, 2-ovuled; style subulate, stigma terminal capitate. Fruit a firm, tardily splitting along the dorsal suture round the base flat, winglike and empty, seed compressed; hilum small; strophiole 0.

Leaflets very firm grey-canescens beneath, the end leaflet obovate, shortly cuspidate. Roxburghii. Membranous or papery glabrous beneath, the end one ovate, the lateral pair. Listen.

536 - SPATHOLOBUS ROXBURGHII Benth.; F. B. I. ii. 193; E. P. s. 2508. Butea parviflora F. I. iii. 248.

[*Spatholobus*.

Behar; Chota Nagpur; W. Bengal; Tirhut; N. Bengal.
A very heavy wood} climber. *Hind.* Maula; Kol. Moru;
Santal. Chihunt lar.

537. SPATHOLOBUS LISTERI Prain.

Chittagong.

A large climber.

249. Clitoria Linn.

Herbs or shrubs, twining or erect; *leaves* pinnately 3-7-foliolate; stipules persistent striate; stipules small subulate, some times 0. *Flowers* very showy, blue, white, red or purple, axillary solitary or paired, or in pairs on the rachis of axillary racemes; bracts like, persistent, paired, the lower opposite free, the upper connate in one; bracteoles usually large, striate, persistent. *Sepals* 5, connate in a membranous tube; the lowest tooth narrow standard, two upper subconnate in a lip. *Petals* much exserted, large erect emarginate narrowed to the base, without wings falcate-oblong, spreading, adnate in the middle to keel shorter than wings, incurved, acute. *Stamens* 10; filament free, or more or less connate with the others, uniform. *Ovary* stipitate, many-ovuled; style long somewhat dilated at the top, longitudinally bearded on the face. *Fruit* a linear compressed pod somewhat thickened, upper or bottom sutures, occluded or continuous within. subglobose or compressed; strophiole 0. *Seeds*

538. CLITOKIA TERNATEA Linn.; F. I. iii. 321; F. B.

E. D. C. 1403.

In gardens everywhere; also often self-sown in jungles, and by waysides.

A slender climber with large cobalt blue, or, less often, pure white flowers. *Vernac.* Aparajit#-

250. Sesbania Pers.

Herbs, shrubs, or small, soft-wooded trees, sometimes pinnately compound, *leaves* even-pinnate, leaflets many-jugate, entire; stipules caducous; stipules minute or 0. *Flowers* in lax axillary racemes with slender pedicels; bracts and bracteoles setaceous, caducous or persistent. *Sepals* 5, connate in a campanulate, slightly 2-lipped or truncate or shortly equally 5-lobed tube. *Petals* much exserted, standard round or ovate, spreading or reflexed; wings

obl^{ong}; keel incurved, obtuse, or bluntly acuminate, long-clawed.
gf^{ant} T⁵ ^ V⁶ xillary filament free, jointed at the base with the
sheath^l; ant^{he}iS^{unif}ov occasionally alternately slightly longer
and shorter. oVary^{usua}% stipitate, many-ovuled; style incurved,
beard^T S^{igma} ten[^]inal capitate. Fruit a linear or rarely
oblon^g y^{Od}, flattened >> subterete, 4-angled or 4-winged, sometimes
subinde^{isce}nt >> se^{pt}ate within between the numerous seeds. Seeds
transv^{ersely} oblong or quadrate; strophiole 0.

Flow^S Po^{Sr} SmaU t0 medium (*75 in_ or less), buas slight:—

s twisted, pendulous; flowers -5 in. or more long; stems and
rach^{is} unarmed:—

lat^{er}ennial, stems woody; flowers *6 in.; pods 6 in. long, sutures undu-
l^{at} and valve³ widely depressed between the seeds; small trees:—
flowers uniformly yellow.....egyptiaca.

flowers more or less coloured:—

Standard externally dotted with purple ...(egyptiaca var. picta.

Standard externally dark maroon or purple

* agyptiaca var. bicolor.

Stem^S inUa^l, Stems Pith-like; flowers '15 in.; pods 10-12 in. long,
SU^{res} str^{aight}, valves slightly abruptly depressed between the
seeds; a swamp species with tree-like stems.....paludom.

Pod^S not twisted, erect or ascending {except sometimes in S. cannabina};

we^s *s -4 in. or less long; annuals with woody stems:—

Stems erect:—

Stems very tall and rachises of leaves smooth; pods with straight
sutures and valves not depressed, oftenest spreading or pendulous,
4-8 in. long.....cannabina.

Stems short and rachises of leaves armed with weak prickles; pods
with slightly undulate sutures and valves widely depressed between
the seeds, 9-12 in. long.....aculeata.

Stems diffuse, procumbent, and rachises of leaves smooth; pods
subtorulose, very erect, 3-4 in. long.....nliginota.

Flow^S with^{Ve} large (a in, long) buds irately recurved; considerable trees
white or reddish flowers.....(grandijiom.

539. SESBANIA EGYPTIACA Pers.; F. B. I. ii. 114 partly.

Cultivated occasionally.

A small tree.

ri^{J39}/2. Var. PICTA Prain. S. cegyptiaca F. B. I. ii. H4 partly.

Cultivated fairly commonly.

A small tree.

- 539/3. Var. BICOLOR W. & A. *S. picta* F. B. I. ii- 114. *Æschy-*
nomene Sesban F. I. 332. E. D. S. 1174.

Generally cultivated and often subsponaneous.

A small tree. Vernac. Jainti.

540. SESBANIA PALUDOSA Prain. *S. aculeata* var. *paludosa* ...
ii. 115 partly. *Mscliynomene paludosa* F. E. D. S. 1164.

Central and Eastern Bengal, in jheels; common. Kath-

A tall marsh plant with tree-like stems. Beng.
sola.

541. SESBANIA CANNABINA Pers. *S. aculeata* var. ...
F. B. I. ii. 115. *Mscliynomene cannabina* F. 1-
E. D. S. 1166.

, Cultivated in N. C. and E. Bengal.

An unarmed annual with very tall slender stems.

Dhunchi.

542. SESBANIA ACULEATA Pers.; F. B. I. ii. 114. *JESCMJ*
spinulosa F. I. iii. 333. E. D. S. 1163.

In all the provinces, in wet fields.

A low virgate prickly undershrub.

543. SESBANIA ULIGINOSA Sweet. *S. aculeata* \ox.pol³³⁴
ii. 115 partly. *Mscliynomene uliginosa* F. I. ul*
Central Bengal.

A diffuse, prostrate, unarmed annual weed
places.

544. SESBANIA GRANDIFLORA Pers.; F. 13. X. ii- H[^] >>
S. 1186. *Mschynomene grandiflora* F. I. iu-^{331>}

Generally planted.

A soft-wooded tree. Vernac. Agati, agasthi.

251. Tephrosia Pers.

Herbs or undershrubs, rarely shrubs; leaves odd-pinnate; the
lets numerous, rarely 3 or 1, obliquely parallel-veined from the
midrib, usually silky beneath; stipules setaceous, sometimes
spinescent, or, if broader, striate; stipe 0. Flowers paired
fascicled in the axils of leaves or on terminal leaf-opposed or
often axillary racemes, occasionally both axillary and racemose
racemes with bracts consisting of connate stipules; bracteoles
Sepals 5, connate in a campanulate tube; teeth subequal or
upper slightly connate or the lowest occasionally longer than the

rest. **P** ^{tal} ^{claw} ^e ; standard rounded ; wings obliquely obovate
 or oblo ⁶ ^{sl} ^{ghtly} ^{adnate} to the incurved obtuse keel. *Stamens* 10;
 v ^{exill} ^{ar} ^{gr} ^l ^{ament} free below, at first connate in the middle with
 tlj ^e ^{oth} ^{la} ^{ment} free below, at first connate in the middle with
 «essile ***** ^{at} ^{len} ^g ^h usually free ; anthers uniform. *Ovary*
 hat > ^u ^S ^{ually} ^S ^G ^{veral} ^J rarely 2-ovuled; style incurved or bent,
 < ^l ^{ened} flattened, bearded or not; stigma terminal capi-
 tate, ^{off} ^{cen} flattened, bearded or not; stigma terminal capi-
 ^ ⁿ ⁱⁿ ^J ^{peni} ^{ci} ^{nate}. *Fruit* a linear pod, somewhat compressed,
 ^ ⁿ ^J ^{peni} ^{ci} ^{nate}. *Fruit* a linear pod, somewhat compressed,
^{ous} or obscurely septate within. *Seeds* ovate ; strophiole
 sometimes small, usually 0.

Calyx-teeth ^{delt} ^{oid} ^{shoi} *ter than the tube ; shrubs ; pods densely clothed
 with ^{ac} ^w Passed brown hairs, slightly recurved ; leaflets acute, 9-12 pairs
Candida.

Calyx-teeth ⁿ ^{nan} [<] ^{ow} ^{cus} ^{pidat} e, as long as tube ; herbs ; leaflets obtuse :—
 Stems ⁶ ^{ei} ^{et} ^{or} ^{aubei} ^{ect} ; leaflets 6-10 pairs :—
 Pod ^{de} ⁿ ^{Sely} ^{Clothed} ^{wifch} ^{lon} g» persistent, spreading silky hairs :—
 Pod ^S ^m ^U ^{Ch} ^{recurv} ed, covered with white hairs. *villosa*.
 Pods ^{sl} ^{ghtly} ^{recurved}, covered with brown hairs. . . . *Hookeriana*.
 Pods ^{fin} ^{ely} ^{downy} with short hairs or glabrescent, slightly recurved
 Stems ^{nr} ^{purpurea}.
 recurv ⁱ ^{stan} ^{diffu} »e ; leaflets 4-5 pairs ; pods finely downy, slightly
 *pumila*.

545. **T** ^{EPHROSIA} ^{CA} ^{NDIDA} DC.; F. B. I. ii. 111. *Bobinia Candida*
 h- I. iii. 327.
 ^ Bengal; Chittagong: elsewhere often planted.

546. **T** ^{EPHROSIA} ^{VILLOSA} Pers.; ~F. B. I. ii. 113; E. V. T. 280.
Galega villosa F. I. iii. 385.
 Behar; W. Bengal.

547. **T** ^{EPHROSIA} ^{HOOKERIANA} W. & A.; F. B. I. ii. 113.
 ^ branching perennial herb, 2-3 feet high.
 C-Bengal; E. Bengal.

548 **T** ^{EPHROSIA} ^{PURPUREA} Pers.; F. B. I. ii. 112; E. D. T. 270.
 • *Galega purpurea* F. I. iii. 386. *G. lanceafolia* F. I.
 lu-386. *G. tinctoria* F. I. iii. 386, not of Linn.
 • to all the provinces, in waste places and by way-
 sides.
 ^ much-branched, very variable perennial herb; steins
 l, 2 feet high. Vernac. Sai-phonka, ban-nil.

549. *TBPHROSIA PTIMILA* Pers. *T. purpurea* var. *pumi* U F. R *
u. 113. Ga %_a cfcjwsa, F. I. iii. 387.

Behar; Chota Nagpur: in fields.

A diffuse perennial weed.

252. *Hillettia* W. & A.

Large climbing shrubs or occasionally trees; leaves odd-pin^{8*} alternate; stipules usually small; leaflets opposite; stipels M * * subulate sometimes 0. Flowers fascicled, rarely scattered, on *• rachis of axillary or terminal simple racemes or panicles; to** small, caducous; bracteoles caducous. Sepals 5, connate in • campanulate tube; teeth usually short or nearly obsolete. P**'' much exerted; standard obovate or orbicular, spreading or »'! Hexed' with or without a callosity at the top of the claw, at* aunculate or not at the base; wings obliquely oblong, not a***¹ to the keel, sometimes connate by their tips ; keel incurved, obtuse-
Stamen. 10; vexillary filament sometimes quite free, someti^s connate in the middle with the rest; anthers uniform, versa**.
Ova annZ T₁ e '' '''' ^ StipHate, base ^^ enoloSed ^ T
S r + or Sheath, man yovuled; style inflexed, beard[^],
Btigma terminal, capitate. Fruit a linear lanceolate or oblo»g- compressed or thickened, coriaceous or woody pod, usually «*! tartly dehiscent. Seed, orbicular or reniform ; hilum small-

Standard not auricled at the base; stamens diadelphous ; pods trU'

Leaflets 13-15, obscurely silk pellæ large; standard glabr^s on the ^ ^ ! Podoori «~u., glabrous «'''*T
Leaflet 5-7, fl. Seent beneath: S«P«»» ^ all; standard silkyVf .
the black; of t₁ick, velvety ctii«-W
Standard auric^{ed} at the base I ^ anjens mona'ciqiphous'ip'ods flattened:
Leaflets 7-9, flowers sholy pediceiled = p^{od} ^ nuHci«<»^g.
Leaflets 9-11; flowers I^r frutico^{be}
subsessile ; pod glabrescent

550. *MILLETIA RACEMOSA* Benth. F.B.LIL105. *K. leiogyes*
F. B. I. ii. 109. *Robinia racemosa* F. I. iii. 329. or

Behar, Rajmahal Hills; Orissa, Khurda. est
A large woody climber. se;

551. *MILLETIA CINEREA* Benth.; F. B. I. ii. 106.
Chittagong.
A large woody climber.

52. **MILLETTIA AURICULATA** Bak.; F. B. I. ii. 108. *M. extensa* F. B. I. ii. 109. *Bohinia macrophylla* F. I. iii. 329.
 ^hota Nagpur, very common.
 A very large, stout, woody climber. *Santal* Hehel;

53. **MILLETTIA FRUTICOSA**, Benth.; F. B. I. ii. 109. *Bohinia fruticosa* F. I. ft. 32a
 2' Bengal, very common near base of hills.
 A very large, stout, woody climber.

253. **Pongamia** Vent.

A tree; *ICAVES* odd-Pinnate, alternate; stipules small; leaflets opposite; *Stlpels* on *Flowers* in fascicles of 2-4 on the rachis of axillary racemes; bracts small, caducous; bracteoles minute, caducous, *SePals* 5, connate in a campanulate tube; teeth obsolete. *Petals* much exerted 5 standard obovate or orbicular, the keel ^{at the base} » wings obliquely oblong, slightly adnate to the keel above the claw; keel obtuse. *Stamens* 10; vexillary *Satelle* connate in the middle with the rest; anthers uniform, beardw. *ogary* subsessile » 2-ovuled; style filiform, incurved, indehiscent. *Stigma* terminal, capitate. *Fruit* an obliquely oblong, *cent* ^{CompreSSed lomentum} » not winged on either side.
 Seed soUt ^{aiA'raA'he} r thick, reniform; hilum small.

54 **JOKOAMU GLABRA** Vent.; F. B. I. ii. 240; B. P. P. I¹²¹.
Paindica F.I. iii. 239.
 Sun dribuns; C. and E. Bengal, on banks of tidal creeks and rivers elsewhere commonly planted., especially in ^hota Nagpur.
 A tree. *Vernac.* Karanj.

254. **Derris** Lour.

^ s Climbing shrubs, rarely trees; *leaves* odd-pinnate, alternate; *stipules* small; leaflets opposite; stipels usually 0. *Flowers* ^{ClCled on the rachis of axillary or terminal racemes or} *QicU* ^{small} bracts small, ca<*ucous; bracteoles ovate or orbicular, *en* ^{CadA} *cus*. *Sepals* 5, connate in a campanulate tube; *te* ^{th'gk} *ort*, or nearly obsolete. *Petals* much exerted; standard obovate, ^{of} *g* ^{OrbicA} *r* not auriculate at the base; wings obliquely ^b *long* ^{ly adnate to the keel above the claw; keel} *ed*, obtuse. *Stamens* 10; vexillary filament free below, connate m

the middle with the rest, rarely quite free; anthers uniform, ^{v^} satile. Ovary sessile or shortly stipitate; ovules 2 or more; ^{By} filiform, incurved, beardless; stigma terminal, capitate. ^{Fr»*} obliquely orbicular or oblong indehiscent compressed * o m e n ^{tum} winged along the upper or both sutures. Seeds solitary or several compressed, reniform or orbicular; hilum small.

Standard with no thickened callosities at the base :-

Vexillary stamen quite free; flowers single in ample thyrsoid ^{P»} nodes neither swollen nor produced into stalks; pods ⁿⁱ upper suture, sutures sinuate between the seeds. ^{leS} Vexillary stamen united with the others at least in the centre of ^{the} sheath; flowers fascicled on tumid nodes that are sometimes ^{uced} into stalks; pods not sinuate :-

Pods winged only along the upper suture :-

Pods narrow, pointed at both ends, several-seeded :-

Leaflets equal at base; pods silky; a climber ^{ten}

Leaflets oblique at base; pods glabrous; a tree ^{&<>}

Pods suborbicular, obtuse, glabrous; seeds solitary ^{T*}

Pods winged along both sutures, glabrous ^{illuJ mosu.}

Standard with 2 thickened callosities at the base; vexillary sta^{te} united with the others :-

Leaves and petals glabrous; racemes much shorter than leaves ^{eunetjoi^1-}

Leaves and petals pubescent; racemes nearly as long as leaves ^{cMp^{tt(ill)}}

555. DERRIS SINUATA Thw.; F. B. I. ii. 246.

Sundribuns.

A large climber in tidal forests.

556. DERRIS SCANDENS Benth.; F. B. I. ii. 240; E. D- & ^{v,0}

Balbergia scandens F. I. iii. 232.

In all the provinces.

A slender woody climber, with excentric stems. ^{B^{eng}}

Noalata.

557. DERRIS ROBUSTA Benth.; F. B. I. ii. 241; E. V. V- ^{d9B}

Dalbergia Krowee F. I. iii. 229.

Chittagong.

A tree 40-50 feet high. Beng. Korai.

ooS. DEBRIS oii^Gwosi Benth.; F. B. I. ii. 241. ^{Galed^l><}

Uginosa P. I. iii. 243,

Sundribuns; Chittagong, coast; C. Bengal, banks [<] tidal rivers.

An extensive littoral climber. Beng. Pan-lata.

579. DERRIS MARGINATA Benth.; F. B. I. ii. 245. Dalbergia marginata F. I. iii. 230.

Chittagong.

530 "h ^ larg G show ^ climber. Vernac. Makrigila.

• ^^RRis CUNEIFOLIA Benth.; F. B. I. ii. 243. Galedupa cuneifolia F. I. iii. 241.

E - Bengal; Chittagong.

561 r > A larg G wood y climber.

• ^ > ERRIS ELLIPTICA Benth.; F. B. I. ii. 243 ; E. D. D. 326. Galedupa elliptica F. I. iii. 242.

Chittagong.

An extensive, showy climber.

255. Dalbergia Linn. f.

Tree climbing ; leaves odd-pinnate, alternate ; leaflets 5 or more, rarely 3 or 1; stipules usually small, deciduous. Flowers small, usually numerous, in simple or axillary or terminal cymes; bracts small, subsistent. Sepals usually minute, often deciduous. Sepals 5, connate, campanulate tube ; the two upper teeth widest, the lowest the longest. Petals somewhat exerted; standard ovate, orbicular; wings oblong; keel obtuse. Stamens 10 the vexillary filament free, the rest connate in a sheath, or 10 all connate; anthers split above, or 10 in two lateral bundles of 5 each; anthers often 8, all connate in a sheath split above. Ovary stipitate, short, beardless; stigma terminal, capitate. Fruit a samaroid, indehiscent, compressed, or rarely thickened, neither thickened nor winged along the sutures, usually reticulate opposite the seed. Seeds 1-4, reniform, compressed; hilum small.

Stipules flattened except opposite the seeds :— [p. 410]

Stamens in two lateral phalanges of 5 filaments each:— [p. 410]

Stipules and bracteoles oblong, persistent, conspicuous; pod thickly stipitate opposite the solitary seed, abruptly narrowed to a stipe twice as long as calyx; leaflets considerably longer than broad ; a climber or a sarmentose shrub..... stipulacea.

Bracts and bracteoles none, or inconspicuous deciduous; pod coriaceous opposite the seeds, gradually narrowed to a stipe ; leaflets not much longer than broad:-

[Dalbergia]

Pod narrow, 4-6 times as long as broad, not veined ^{°PP°} seeds; leaflets persistently hirsute on both sides; no ^{ver} congested axillary panicles; a tree; bracteoles 0, ^{stalk ^ po5} twice as long as calyx.....^{... se rice^a}

Pod wider, only 2-3 times as long as broad, veined ^{opp} seeds; leaflets early glabrous on both sides; stalk o ^{f pod much} longer than calyx :—

Calyx-teeth minute, deltoid; flowers in dense ^{axillary and} terminal panicles; a climber; bracteoles 0.....^{vulubilis.}

Calyx-teeth as long as tube; obtuse; a tree; ^{brft ^ ^ c ^ ^ i re-} sent; standard with a basal callosity.....^{edg^o*}

fStamens 9-10 in one bundle, vexillary stamen united to on ^{close-sett} sheath or absent:—[p. 409]

Leaflets many (25-41), thinly pubescent, trapezoid-oblong, ^{^ ^} small; flowers in congested sessile axillary panicles, ^{a J ^ j ifl,} papery; a climber.....^{tam or bicul* r}

Leaflets fewer (never more than 15), glabrous, oblong or ^{th subcap-} distant, large or medium :—

Leaflets 11-15; flowers in ample terminal panicles, wi ^{stalk of} tate, congested corymbs at the ends of their branches, ^{cor fer iflora.} pod many times longer than calyx; a climber.^{l only twice}

Leaflets 3-7; flowers in axillary panicles; stalk of po < ^{distinctly} as long as calyx; tall trees:—

Panicles small, pedicels short; leaflets roundish, ^m ^{Sissoo.} cuspidate; pods narrow, 6-8 times as long as broad ^{btuse}

Panicle ^{or refuse} lax, pedicels long; leaflets oblong or orbicu ^{folia.}

*Pod uniformly thickened throughout, upper suture falcate ^{in Lf? eScen;}

Stamens in 2 lateral phalanges of 4 or 5 each; branches spi ^{spin} an erect shrub.....^{malensis.}

Stamens 10 in one bundle; unarmed; a large climber...^{cam e}

562. DALBERGIA STIPULACEA Roxb.; F. I. iii- ^{2 3 3;} ii. 237; E. D. D. 87.
- N. Bengal; Chittagong.
- A climber or erect shrub, according to circumstance [^];
563. DALBERGIA SERICEA G. Don.- *D. hircina* F. B. I- ^{u*}
- E. D. D. 31. *Z. stenocarpa* F. B. I. ii. 238.
- N. Bengal.
- A tree.
564. DALBERGIA VOLUBILIS Roxb.; F. J. iii. 231; F. B. I. & ^{230;} E. D. D. 94.

- ChotaNagpur; Behar; W.Bengal; N.Bengal; Orissa;
Chittagong. . . .
A large climbing shrub. *Santal.* Bir munga, nan sins;
Uriya Nubari. ^ ^
- ⁵65. DALBERGIA LANCEOLARIA Linn. f.; F. B. I. ii. 285 j, *• £
D. 32. *D. frondosa* F. I. iii. 226. *D. zeylanica* F. I. m. ^
Behar; ChotaNagpur; W. Bengal: planted elsewhere.
A tall, handsome tree. *Santal.* Chapot siris. -- -
- ⁵⁶6. DALBERGIA TAMARINDIFOLIA Roxb.; F. I. iii. 233; F.B.I.
^ 234 ; E. D. D. 92.
Chittagong.
A climbing or, rarely, suberect shrub.
- ⁵⁶*7. DALBERGIA CONFERTIFLORA Benth.; F. B. I. ii. 233.
Chittagong.
A large climber. - .. 001 .
- «& DALBERGIA BISSOO Roxb.; P. I. iii. 223; F. B. I. ii. 231,
E. D. D. 64.
In all the provinces.
A tall tree. *Vernac.* Sissoo.
- ⁶69. DALBERGIA LATIFOLIA Roxb.; F. I. iii. 221; F. B. I. ii. 231;
E - D. D. 40.
Chota Nagpur ; Behar ; N. Bengal. . . .
A tall tree. *Beng.* Sit sal. .. •
- ⁵^0. DALBERGIA SPINOSA Roxb.; F. I. iii. 233; F. B. I. n. 238,
E. D. D. 84.
Sundribuns.
An erect, spiny shrub.
- ⁵7L DALBERGIA CANDENATENSIS Prain. *D. nwnosperma* l'. u. r.
ii. 237 ; E. D. D. 48.
Sundribuns.
A rather extensive climber.
256. Pterocarpus Linn.
- ^A^Er^rect timber trees; *leaves* odd-pinnate, alternate; leaflets
^{*}^ri % papery or coriaceous, alternate; stipules small, deciduous;
^{stl}Pels 0. *mowers* yellow, in terminal or axillary racemes, q
^f*<*es; pedicels faintly or distinctly articulate; bracts small,
J^duous; bracteoles 2, often caducous. *Sepals* 5, connate m a
⁷^binate or campanulate tube, somewhat incurved; teeth short
^{the} two upper sometimes subconnate. *Petals* exserted ; standard

orbicular or wide-ovate, not appendiculate, its margins are those of the obliquely oblong wings; keel-petals smaller, not adnate to wings, and not or only slightly *Stamens* 10, all connate in a sheath split above, or in two sheaths of 5 each, or the vexillary filament free, with the keel-petals connate in one sheath or in 2, rarely 3, bundles; anthers versatile. *Ovary* sessile or stipitate, 2-6-ovuled; style incurved, beardless; stigma terminal, capitate. *Fruit* a compressed, indehiscent, orbicular or ovate lomentum, with the suture then usually lateral, the centre seed-bearing and often externally reticulate, the margin forming a coriaceous or sabmenabrBfi wing; septate within if more than 1-seeded. *Seeds* 1-2% orbicular subreniform; hilum small.

Leaves firmly coriaceous, finely pubescent beneath; pod velvety young; pedicels short:—

Leaflets oblong, obtuse..... Marsupium

Leaflets ovate, acute or acuminate..... Uarsupium

Leaves firmly papery or thinly coriaceous, glabrous; pods very sparsely pubescent when young; pedicel* long, slender:—

Leaves ovate-rotund, with a sudden blunt point, main nerves hardly more distinct than the secondary; panicles almost all only one raceme terminal; bracteoles lanceolate.....

Leaves ovate-lanceolate, narrowed gradually to the apex, main nerve much stronger beneath than secondary; panicles terminal, or only extending into the axils of 2-3 distal leaves; bracteoles ovate.....

572. PTEROCARPUS MARSUPIUM Eoxb.; F. I. ill- 234; F. B. I. ii. 239; E. D. P. 1370.

Orissa, Khurda; Chota Nagpur.

A tall tree. *Vemac.* Bija sal; pit sal. The Gum Kino tree.

572/2. Var. /}. P. indicus F. B. I. ii. 238 partly not of Willd. Behar, Rajmahal Hills.

A medium tree. *Vemac.* Bija sal. Gum Kino tree.

573. PTEROCARPUS INDICUS Willd.; F. I. ii. 238; F. B. I. & 239 partly.

Planted occasionally in C. Bengal.

A medium tree; native of Moluccas.

574. PTEROCARPUS DALBERGIOIDES Koxb.; F. I. iii. 236. F. B. I. i. i. 238 % 68.

Planted not infrequently in C. Bengal,

A tall tree. Andaman Red Wood.

257. Melilotus Linn.

A UnUal ol, biennial her>s; leaves pinnately 3-foliolate; wain-uey
 sco T ^ the leatiets excurr < n t as marginal teeth; stipules adnate;
 race S or Flowers small » white or yellow, in slender axillary*
 a ca, n manu ate m @ s » bracts minute or 0; bracteoles 0. Sepals 5, connate in
 free from the sfcan iinal tube; standard obovate or oblong, sub-
 sessile; wings oblong, longer than the obtuse keel. Stamens 10; •
 vexillary filament *ree ov connate in the middle with the others;
 filaments A iform; anthers uniform. Ovary sessile or stipitate,
 few 2 << y ^ V Uled; st y le niform, incurved; stigma small, terminal,
 or • l ^ a su ^ lobose or oblong thick-walled tardily dehiscent pod
 Uidehiscent lornentum, longer than the calyx. Seeds few or
 solitary; strophiole 0.

Corolla minut e, yellow; pod usually 1-seetled ; annual imliea.
 Corolla l, at W larger, white; pod often 2-seeded ; biennial alba.

575 - MELILOTUS INDICA All. *M. parvijlora* F. B. I. ii. 89 ; E. I>. M. 422. *Trifoliwm indicum* F. I. Hi. 388.

In all the provinces. 1, "
 ^ small field-weed of the cold season. Venuiv. Bānri methi. -ijij

576. MELILOTUS ALBA Lamk ; F. B. I. ii. 89.

In all the provinces. ^ field-weed appearing in the cold season. Veriuw* l ^ in r S a f e ban-methi. u s i i t i u s f ;

258. Trigonella Linn.

A n n u a l herbs; leaves pinnately 8-foliolate ; main-nerves of t t t f i ,
] e a f . ^ U a u a l l y . excurrent as marginal teeth; stipules adnate, j f ,
 B t i ^ 0. Flowers solitary axillary, or capitate, subumbellate ^
 f l e P ^ teemed on very short or elongated axillary peduncles, ^
 b l , n s e v ^ acts minute or obsolete; bracteoles 0. Sepals 5, connate in a ^
 t u b U l a r calyx; teeth distinct, subequal. Petals free from the ^
 s t ^ a m m a l tube; standard obovate or oblong, short-clawed l, ^ ^
 ^ s s i l e ; wings oblong, longer than the obtuse keel. Stamens 10 ;
 v e x m a i - y f i l a m e n t f r e e o r c o n n a t e i n t h e m i d d l e w i t h t h e o t h e r s ;
 f i l a m e n t s f i l i f o r m ; a n t h e r s u n i f o r m . O v a r y s e s s i l e o r s h o r t l y
 ^ P i t a t e , a i a n y - o v u l e d ; s t y l e f i l i f o r m o r t h i c k e n e d , b e a r d l e s s ;
 l * g m a t e r m i n a t s m a l l . F r u i t u s u a l l y a n i n d e h i s c e n t l o m e n t u m ,

less often a follicle opening by the ventral suture, rarely a P^{od}; thick and long-beaked or thinner, linear or compressed or terete, straight or falcate, continuous within. *Seeds* rather numerous, strophiole 0.

Erect, robust; flowers 1-2, axillary ; pod long, turgid, beaked

Diffuse, slender; flowers 0-12, closely racemose; pod Hat, linear, *¹,
cately recurved. -mC0>^{micH} *lata*.

577. TRIGONELLA FCENUM-OIUSCCM Linn. ; F. I. iii. 389; F- ^ *
". 87 ; E. D. T. 612.

Cultivated in the western provinces.

An annual crop. Vernac. Methi. A Fennel.

578. T*HH>SKLLA COBNIUULATA Linn.: F. I. iii. 389; F. V- ^r
ii. 88.

Tirhut and N. Bengal, cultivated ; in C. Bengal only *
cold-weather weed and rare. Beng. Piring.

259. Medicago Linn.

Herbs, rarely shrubs; leaves pinnately 3-foliolate; main-nerve*
oi leaflets often excurrent as marginal teeth; stipules adnate,
stipels 0. Flowers small, in axillary racemes or heads, rtfW
subsohtary; bracts small or 0; bracteoles 0. Sepals 5, conn**
in a campanulate tube; teeth subequal. Petals exserted- ft*
from the calyx-tube; standard obovate or oblong, subsessifc'
wings oblong, longer than the obtuse keel. Stamens 10; vexuW
filament free, the rest connate; filaments filiform; anthers
uniform. Ovary sessile or shortly stipitate, usually immy-ovd*¹,
larely 1-ovuled; style subulate, beardless; stigma Bubcapite*;
oblique. Fruit a spirally twisted, rarely falcate, indehiseen*
lom itu Seeds SeVemf, iardy (M* h^na) solitary; ^
pMoTe o!ⁿ

Stems suberect; a crop... *sativa*.

Stems diffuse, trailing; field-weeds' C.....

.....*lupulina*.
denticulata.

579. Mjw ^ O ^ A Linn... p# B L ^ 9o " - ^ " D.M ya4/

A cold-weather forage crop, especially in Behar.

A suberect, muoh-branohed herb, i-2 fapt high. Luoero'

^{580*} MEDICAGO LUPUUNA Linn.; F. B. I. ii. 90; E. D. M. 332.

N. Bengal.

A diffuse, finely downy, trailing weed.

^r
^{081,} MEDICAGO DENTICULATA Willd.; F. B. I. ii. 90; E. D. M. 329. *M. polymorpha* F. I. iii. 390.

Behar; N. Bengal.

A diffuse, almost glabrous weed. Vernac. Mainā.

260. Arachis Linn.

Prostrate herbs; leaves even-pinnate, leaflets 2-jugate; stipules ^{ad}ate; stipels 0. Flowers in a dense, axillary spike, sessile, ^{or} shortly pedicelled in the axil of a leaf or a 2-auriculate bract; jacteoles below the calyx linear. Sepals 5, connate in a long, ⁴ ^{eilder} tube; lobes membranous, the lowest slender, distinct, the upper connate in a lip. Petals inserted with the stamens ^{at} ^{Jr} ^{the} apex of the tube; standard suborbicular; wings oblong, ^{6e} ^{keel} incurved, beaked. Stamens 10, or less often 9, connate ^a closed tube; anthers alternately longer subbasifixed, and ^{sh} ^{orter} versatile. Ovary sessile at the base of the calyx-cube, ²⁻³ ^{Ule(i; after} lowering raised by and continuous with the ^J ^U ^{*} ^{elongated, stipe} ^{like} ^{reflexed} ^{an} ^J ^{rigid} receptacle, with a ⁿ ^{ul} ^{apical} callosity left by the disappearance of the style; style ^{lon} ^{ret} ^g ^{tiliform; sti} gma terminal, minute. Fruit a thick, oblong, ^U ^{late, indo} ^{his} cent lomentum, subtorulose but continuous ^{wit} ⁱⁿ ^{bu} ^{Vy} ⁱⁿ ^S ^{self} to ripen underground. Seeds 1-3, irregularly ^{ovoid}; ^{co} ^{tyledons} thick, fleshy.

⁵⁸² ARACHIS HYPOG^A Linn.; F. B. I. ii. 161; E. D. A. 1261.

Occasionally cultivated.

An annual herb, ripening its pods underground. Beng. Belati-mung. chiné-badam, mat-kalai. The Ground Nut.

261. Zornia Graef.

Annual herbs; leaves digitately 4-foliolate or 2-foliolate; leaflets ^S nd ^{dotted}; stipules subfoliaceous, gland-dotted; stipels 0. ^J ^{lo} ^{«Jer} ⁸ in interrupted spikes or solitary, on terminal or axillary ^t ^{uncles}; bracts geminate, stipular, striate, larger than the true ^{stl} ^P ^{ules}; bracteoles 0. Sepals 5, connate in a small subhyaline ^{Cal} ^{*x}; 2 upper lobes connate in a lip, lowest lobe oblong or lanceolate, as long as the upper, 2 lateral lobes small. *P«tah ex-* ^{Sert} ^{ed}; standard suborbicular, clawed; wings obliquely oblong;

[Zornia.

keel incurved, acute. *Stamens* 10, connate in a closed tube; anthers alternately longer subbasifixed, and shorter sessile. *Ovary* sessile, many-ovuled; style filiform; stigma terminal. *Fruit* a lomentum of several small, rounded, finely jointed, 1-seeded indehiscent joints. *Seeds* subreniform; strophiole 0.

583. ZORNIA DIPHYLLA Pers.; F. B. I. ii. 147; E. D. A. 745.

Hedysarum diphyllum F. I. iii. 353.

Behar; Chota Nagpur; W. Bengal. *Sanial* Tandi P.

262. Alhagi Desv.

Spiny shrubs; *leaves* simple, small, entire; stipules free; *Flowers* few, in axillary racemes with spine-tipped rachis; minute; bracteoles 0. *Sepals* 5, connate in a campanulate tube; teeth short, subequal. *Petals* exserted; standard obovate, clawed; wings subfalcate, free; keel incurved, obtuse. *Stamens* 10; vexillary filament free, the rest connate; anthers uniform. *Ovary* sessile, many-ovuled; style filiform, incurved, bearded; stigma terminal, capitate. *Fruit* a linear, thickish, indehiscent lomentum, constricted and doubly septate between the seeds, not jointed. *Seeds* reniform; strophiole 0.

584. ALHAGI CAMKLOMUM Fisch. *A. maurorum* F. B. I. ii. 147.

E. D. A. 745, *Hedysarum Alhagi* F. I. iii. 344.

Behar; Gy*^a.

A low, pungently spiny shrub. *Hind.* Javilsd. %

263. Lespedeza Michx.

Herbs or shrubs, usually softly silky; *leaves* pinnately 3-foliate, rarely 1-foliate, leaflets entire; stipules free, small; stipules jointed; *Flowers* numerous, in axillary fascicles or racemes or in terminal panicles; bracts small; bracteoles 2 at apex of pedicels. *Sepals* connate in a campanulate tube; lobes subequal or the 2 upper slightly connate. *Petals* exserted; standard obovate or orbicular, narrowed to a claw; wings falcate, free or faintly adnate to the standard; keel incurved, obtuse or beaked. *Stamens* 10; vexillary filament free, the others connate in a sheath; anthers uniform. *Ovary* sessile orstipitate, 1-ovuled; style filiform, incurved; stigma terminal, capitate. *Fruit* an ovate or orbicular, reticulate, flattened, indehiscent, 1-seeded lomentum. *Seed* compressed; strophiole 0.

585> LESPEDEZA SERICEA Miq.; F. B. I. ii. 142.

Chota Nagpur, on higher hills, rare: not reported from Parasnath.

An erect undershrub with long, slender, virgate branches.

264. Smithia Ait.

Herbs or undershrubs; leaves even-pinnate, the rachis ending in a bristle, rarely with a terminal leaflet; leaflets small, sensitive, stipules persistent, membranous or scarious; stipels 0. Inflorescences in axillary, usually unilateral, racemes; bracts and bracteoles scarious or membranous, persistent. Sepals 5, connate in a deeply 2-lipped calyx; upper lip entire or emarginate, lower entire or shortly 3-lobed. Petals exerted; standard suborbicular, short-curved; wings oblique, oblong, rarely obovate; keel incurved, obtuse. Stamens connate in 2 lateral bundles of 5 each, the bundles at first slightly adnate in front; anthers uniform. Ovary sessile or stipitate, many-ovuled; style filiform, incurved; stigma terminal, capitate. Fruit a lomentum of few or numerous, flattened or turgid 1-seeded joints, folded together inside the calyx. Seeds reniform; strophiole 0.

Calyx rigid, with close, parallel, simple veins:—

Flowers in short, simple racemes; leaves and calyx slightly bristly

sensitiva.

Flowers in pairs in the axils of the leaves; leaves and calyx distinctly bilobed; upper nodes of stem congested in a head

geminiflora var. *conferta*,

Calyx membranous, with distinctly separated anastomosing veins:—

Lucernae dense axillary; bracteoles nearly as long as calyx, ciliated at the edges; calyx densely bristly; stems slender, 1-2 feet high... *ciliata*.

Racemes forming a lax corymbose panicle; bracteoles less than half as long as calyx, obtuse; calyx with only a few bristles; stems stout,

3-4 feet high..... *grandi*.*

586. SMITHIA SENSITIVA Ait.; F. I. iii. 342; F. B. I. ii. 148; E. B. s. 2259.

In all the provinces.

An annual weed of waste places. Hind Oda-brim;

Beng. Nala-kashina.

587. SMITHIA GEMINIFLORA Roth var. CONFERTA Bak.; F. B. I. ii. 149.

Behar; Chota Nagpur.

A weed of waste places.

U. MINOSAE.

wider the reniform leaflet subulate, M « « w uwudly *° j g " ^ terminal or axillary racemes; bracts large, striate, (1 e c " ' Wteoles minute or 0. S ^ ab 5, connate in a ^ / ^ . T * with subequal, setaceous teeth. *Petals* minute; standard oiwoi-W, emarginate, narrowed to a claw j wings oblong, adnate to the obtuse keel. *Stamen*, 10; vexillary filament free, the rest, . . »- nate; anthers uniform. O ^ ry subsessile, 1-ovuled; style M O rt fruit wflexed above, thickened belbw; stigma terminal, capitate, a compressed, dimidiate, indehiscent, l-seeded, membranous, le, ticulate lomentum; dorsal margin straight. *Seed* transverse ^ oblong, subrenifonn ; strophiole 0.

ngq. !- TM n . TO « I ii. 158- Hedysnruvi
 •Ja^ ULEIOTIS SOBOKIA DC; i- J5- i>

W. Behar, rare.

A slender, trailing annual.

267. Uraria Desv.

Perennial herbs or undershrubs; *leaves* odd-pinnate, leaflets !-9; stipules free, acuminate, striate below; st.pels ^ubulate. *'°wew many, in terminal spicate racemes; bracts ovate or lai y <*olate, acuminate, persistent or deciduous; bracteoles 0. hv*u 5. connate in a very short tube; 2 upper teeth short, 3 to *e j setaceous. *Petals* smaH ; standard orbicular or obova,te, nai r o ve d to a,claw; wings falcate-oblong, adnate to the shghtiy incmved, obtase tad. *lumen*, 10; vexillary filament free,the rest con »ate; anthers uniform. *Ovary* sessile or shortly stipitate, « nan 3. ovuled; style filiform, inflexed ; stigma terminal, capital e. Fruit • lomentum of 2-6 small, turgid, 1-Meded, « ^ « i * ^ dually more or less folded together within the calyx, ^ "o J; late ly continuous and exserted. *Seed*, orbicular or subglobose, ~ ~ ~ ~ ~ 0.

Upper leaves 5-9 foliolate:—

Leaflets clouded, linear ; pedicels shortly bristly ; jointe of pod * picta.

Leafllgreen, "obionBrpeaiceis'cioihed with long ^ ^ ^ ^

pod opaque.....

Leaves 3-1-foliolate intermixed:—

•Stems trailing; leaflets small, orbicular, . ^ , head g short#

<lense, oblong; bracts narrow, ciliated, pe»»tent, lowei ^ " ^ . elongated ; joints of pod finely pubescent [p. 4-0J

[Uraria.

•Stems erect; leaflets large:—[p. 419]

Leaflets cordate-ovate, often clouded; heads short,
bracts ovate, ciliated, persistent; lower calyx-teeth

of pod glabrous.....

Leaflets ovate or oblong, not cordate, green; nt>*
bracts cuspidate, pubescent, deciduous; calyx-teet

Joints of pod opaque, dark, pubescent; heads la*

Joints of pod shining, pale, quite glabrous;
flowered

dense, cylindric;
elongated; joints
alopecuroides.

W d s long, ^dric;

h s u J e qual:—
^owered

hamosa.

heads denS6~
ea

neglect.

Doodia

593. URARIA PICTA Desv.; F. B. I. ii. 155; E. D. u -
picta F. I. iii. 368.

In all the provinces.

An erect, little-branched herb. Beng. Sankar-J

Dábrá.

594. URARIA CRINITA Desv.; F. B. I. ii. 155.
F. I. iii. 369.

Chittagong.

An erect, little-branched herb.

595. URARIA LAGOPOIDES DC.; F. B. I. ii. 156; E-
Doodia lagopodioides F. I. iii. 366.

In all the provinces.

A prostrate weed of grassy places. Beng. uroia

Hind. Petwan.

596. URARIA ALOPECUROIDES Wight. *U. repanda* F. B.
Doodia alopecuroide» F. I. iii. 368.

Behar; Chota Nagpur; E. Bengal.

An erect herb or undershrub.

597. URARIA HAMOSA Wall.; F. B. I. ii. 156. *Doodia*
F. I. iii. 367. *D. simpUcifolia* F. I. iii. 366.

Chota Nagpur; Chittagong.

An erect, branching undershrub.

598. URARIA NEGLECTA Prain. *U. lagopus* F. B. I. ii-
not of DC.

N. Bengal, Duars.

A short, erect herb.

268. Lourea Neck.

Herbs, erect or prostrate; leaves 1-3-foliolate, leaflets usua*
broader than long; stipules free, striate or subulate; stip^{els}

Desmodium.}

LEGUMINOSÆ.

subulate. *Flowers* usually in pairs, in lax *terminal racemes*; bracts acuminate, caducous; bracteoles 0. *Sepal** 5, *accre* campanulate tube; teeth subequal, rather broad, *use keel*. *W. short; standard obovate or obcordate, claw *others* very oblong, adnate to the slightly curved *Stamen* 10. *Ju*ary filament free, the others *connate* *on». *Ovary* 2- or more-ovuled, sessile or *orbiculate*, *infl*ed; stigma wide-capitate "compressed, Amentum of 2 or more 1-seeded, indehiscent, *orbiculate* *turgid joints folded together within the calyx, beas* or subglobose; strophiole 0.

599. LOUREA VESPERTILIONIS Desv.; F. B. I. u. w

Vespertilioivis F. I. iii. 352.

waste places.

Sometimes planted; often *l*

An erect, little-branched hero.

269. Ouge. maBenth.

A tree; *leave*, pinnately 3-foliolate; *deciduous*, *rather large*. *Flower** in densely fascicled *racemes*; bracts *axils* and on old wood; pedicels fascicled on *the rachis*; *minute, persistent*. *all*, scale-like; bracteoles under the calyx *teeth all* *5*, connate in an obtusely campanulate *base*, the lowest larger than lateral, the 2: upper *connate* *suborbicular*; *erect* *Up. Petals* much exerted; standard *adnate* *erect-clasped*; wings obliquely oblong, *filament* *teeth*, somewhat incurved keel. *Stamen** 10; *free* the rest connate; anthers uniform. *Ovary* *3* *capitate* *subulate*; stigma *tern* *or* *an elongated, linear, flat, smooth pod* *reniform*; *at* *hardly* *dehiscent joints*. *5* *compressed*,

2 *hi* *ea*

B. I. ii. 161; E. D.

OUGENIA DALBERGIIODESINENSIS F. I. iii. 220.

O. Behar; Chota Nagpur; Orissa.

Tinis; Uriya

An erect tree. *Hind- Sandan; BfU-*

Bandhona; Kol. Unta.

27 *O. Desmodium* Desv.

or pin.

H *bs* or shrubs, *rare* *1-foliolate* *free or connate* *% 3-foliolate; stipules dry, usually Aviate,*

opposite the petiole; Stipels sub 1a^ o ft- long. **Flowers**
 usually small, Simple Or Panicle* < * terminal, rarely subaxillary
 racemes / ^ o * SOLitary on «» rachis, less often in *
 peduncles, 1 a S UfflELS or fascicles, braOU single with sol**
 Se OR R - UUT (M oUter and two in ^ with paired ped ^
 bracteoW ,a te f* Pbrsistent_ or membranous and diguoy*,
 connate L ^ ^ Persistent, OT min ^ « obsolete. **Septs 5,**
 lon r tl 1 rter or
 acut ac f- 2 Upp6r ^ bconnate in a lip, the S lower
ob ob of Ticular - Petah exs_ted, standat b ovate,
 obliquely obl > short_ola wed, base narrowed, rarely cor keel.
Stamens 10, connate On g More « k- -Jnate to the obtuse am
 partially or quite free, in a olosed tube_ « *h« vexillary fl ^
 sessile or stipitate, 2 «» »** connate; anthers uniform. <» *
 minial, capitate. F ^ V-ovuled; style incurved; stign ^
 usually distinct. "" ^ exSerted from W' sessile or stipi ^
 indehiscent, less ?** ^ ^ P ^ ting and dehiscing by < f
 suture, rarely indlsti »ctly jointed and follicular. 5<rf> <> JI,
 pressed, orbicular or renifo rm; stl.ophiole 0.

*Pods distinct 1 spring i w joints. [P 424]
 †Leaves 3-f K K i S . r - ,

Stems diffuse, prostrate
 all, never over 1 in. rarely half that length;
 slender, cylindric, traili
 hardly exoe<lin 8 the petioles; leaflets obovat e-cuneate,
 h m T tiuncate or emarginate at apex; flower, all axillary, ^
 getner; pod with straight upper and indented lower suture
Pedicels than the petioles; leaflets oblong or obovate,
 rounded -- flpex :
Flowers 1-3 axUary > also 2-6 in small lax racemes; pods with
 straight T rind indente < Clo i er suture. ^ acne: MerofhlW.
 Flowe ITI f UMY, n sma ^ r pod
 inden o'h SUTUreS: leaflets smallerparrifolium.
 Leaflets tage 2-3 .
 man -flo ywered'] o *eraid nlu long; stems stout > angular; rac emes
 obovate, entire; a ; aXiHairy, also in terminal panicles; le afflets
 Stems erect or suh ^ e t ^ ented on both sutllies * & " sum.
 ! Bracts larire 9 #<i- /
 ~ to llo lft te, persistent; a woody shrub [p. 423J
 pulc . lum.

†Bracts small, simple, deciduous:—[p. 422]

Flowers in dense, short-peduncled, axillary umbels; woody shrubs:—

Bracties terete; joints of pod large, longer than broad
umhellatum.

Branches angular; joints of pod small, as broad as long:—

Pods silky.....*Cephalotcs.*

Pods glabrescent.....*Cephalote** var. *congesta.*

Flowers in more or less elongated racemes :—

Joints of pod not longer than broad, each dehiscing along the lower suture :—

Stems clothed with adpressed hairs.....*polycarpum.*

Stems clothed with spreading hairs
polycarpum var. *trichocaulon.*

Joints of pod 4 times as long as broad, each joint indehiscent
lariflorum.

†Leaves 1-foliolate 422]

Stems erect or suberect:—

Petioles not winged :—

•leaflets membranous or subcoriaceous, longer than broad, oblong, acute, glabrescent on the upper surface :—

Racemes lax; pods glabrescent; leaflets entire :—

Taller ; leaves rounded or cuneate at base. . . . *gangeticum.*

Dwarf ; leaves cordate at base, smaller

gangeticum var. *mnkulata.*

Racemes dense; pods densely pubescent; leaflets obscurely repand.....*ringatum.*

leaflets coriaceous, as broad as long, ovate, subobtuse, repand, densely persistently scabrous; racemes dense; pods densely

Pubescent*Uaifolium.*

Petioles broadly winged :—

Pods hairy throughout, narrow.....*triquetrum.*

Pods glabrous throughout, very wide, thinly membranous
alatinn.

Stems diffuse:—

Petioles broadly winged; pods with a line of adpressed hairs along each suture, elsewhere glabrous.....*pseudo-triquetrum.*

Petioles not winged :—

Leaves reniform; calyx glabrous, teeth short; pedicels straight;

Pods 3-5-jointed, joints longer than broad ; racemes lax
reniforme.

leaves rounded, cordate; calyx densely hairy, teeth long;

Pedicels decurved at tip; pods 2-jointed, joints as broad as

racemes dense*rackysU«hyu».*

•Pods indistinctly jointed, dehiscing in a continuous line along the ventral suture; leaves 3-foliolate :—[p. 422]

Pod glabrescent or only downy ; undershrubs 3-4 feet high :—

End-leaflet 4-6 times as long as broad.....*gyrans*.

End-leaflet twice as long as broad ; flowers larger

fjyraua var. *Roylei*.

Podjeopiously, loosely pubescent; shrubs 8-10 feet high *gyroides*.

601. DESMODIUM TRIFLORUM DC. ; F. B. I. ii. 173. D. *parvi*
folium E. D. D. 843. *Hcdys<t>>>> trJiJnmm* F. T. 115- 353.

In all the provinces.

A common prostrate weed. *Stuitai*. Tuiiii ciaiom ai'ft* *

602. DESMODIUM HETEROPHYLLUM DC.; F. B. I. ii. 173. *Hcdll'*
xarum reptans F. I. iii. 354.

E. Bengal, rare.

A prostrate weed.

603. DESMODIUM PARVIFOLIUM DC; F. B. I. ii. 174.

Chota Nagpur, western parts, very rare.

A prostrate weed.

604. DESMODIUM DIFFUSUM IX'; F. JJ. 1. ii. 169; E. D. D. & *^h
Hedyaruin articuintum F. I. iii. 355. *H. quinqueang*^{11'}
la turn F. I. iii. 355.

Chota Nagpur; Behar; W. Bengal; C. Bengal.

A prostrate, diffuse, ctespitose herb.

605. DKSMODIUM PULCHELLUM Benth.: V. b'. I. ii. 1^2. *Hedy'*
Sarumpulehellum F. I. iii. 361.

Chota Nagpur ; E. Bengal; Chittagong.

A stoutish shrub, 3-6 feet high.

606. DKSMODIUM UMBELLATUM DC.; F. JJ. I. ii. 161. *Hedysarum*^m,
arboreum F. I. iii. 860.

Sundribuns.

A sea-coast shrub or small tree, reaching 20 feet.

607. DESMODIUM CEPHALOTES Wall.; F. B. T. »: 1 ft 1: K. D. D. 832.
Hedysarum Cephalotea F. I. iii. 360.

Chota Nagpur; Bchar; C. Bengal; E. Ucngal.

A shrub. *Snntai*. Bir jharwar.

607/2. Var. CONOBSTA Prain. *Hedysarum nmheUatum* F. ^r
iii. 360, not of Linn.

Chota Nagpur; Chittagong.

A shrub.

608. DESMODIUM POLYCARPUM DC.; F. J. I. ii ^ 171. *Hedymrum patens* F. I. iii. 362. *H. purpnreuni* F. [.ijj# ^5g#
 In all the provinces.
 An erect or suberect undershrub.
- 608/2. Var. TRICHOCAULON Bak. ; F. B. I. ii. 172.
 Chota Nagpur, very rare (on Parasr^{lātn} an(j on a h||| east of Pitorea) ; Chittagong.
 A suberect undershrub.
609. DESMODIUM LAXIFLORUM DC.; F. B. I. ij ig ^ *Hedysarum recurvatimi* F. I. iii. 858. *H. diffusum* \?_u j_m m, 357^ no^ of Willd.
 Chota Nagpur ; E. Bengal.
 A slender, erect undershrub.
610. DESMODIUM GANGETICUM DC.; F. B. I. ii. IQQ, . ^ jy. D, 339. *Hedysarum gangeticum* F. I. iii. SftJ Hm co^mnum p. I. iii. 349.. . . . ;
 In all the provinces. t| only: ...
 A suberect undershrub. *Vernthcr vciiani*; *Santal. Tandi bedi janetet**. pods 4<
- 61<V2. Var. MAOULATA Bak. ; F. B. I. i
 Tirhut; Behar ; Chota Nagpur. ds 2-3
 A dwarf undershrub. -irtvu
611. DESMODIUM VIRGATUM Zoll. D. l<<it^{liny}um b) | ^ 1. ii: 108
 • partly, not of DC. ll<
 Shittagong.
 A suberect undershrub.
612. DUSMODIUM LAFIFOLIUM DC; F. B. I. ii-168; E. D. D. 341. *Hcdysarum latifolinm* F. I. iii. 850.
 Behar; Chota Nagpur ; W. Bengal; Tippera; Chittagong.
 An erect undershrub. *Santal. Sim ni^tha sura*.
613. DESMODIUM TRIQUKTRUM DC.; F. B. i# ii. 163 partly. *Redy8arum (datum* F. I. iii. 348.
 Chittagong.
 A small shrub.
614. DKSMODIUM ALATUM J< F. B. I. I. II. 163
 Partly, not of DC.
 Chittagong.
 An erect shrub.
- 61<~> DKSMODIUM PSRUDOTRIQUBTRUM DC. />.

Calyx not exceeding the first joint of the pod :—

Pod moniliform, veinless, turgid; stems clothed with fine spreading hairs..... *monilifer*.

Pod not moniliform, reticulate-venose :—

Pod compressed; stems densely clothed with spreading hairs *humosu**.

Pod terete ; stems glabrescent: —

Stems ascending; lower leaves usually lanceolate and upper oblong, occasionally lower oblong and upper ovate ; racemes lax *raginali**.

Stems more slender, diffusely spreading; lower leaves always oblong, upper ovate; racemes dense

*nigimili** var. *mimmulurij'oliit*.

Pod much longer than first joint of pod ; imbricated in fruit :—

Flowers sessile; calyx densely beset with long, white, cottony hairs *pubcacen**.

Flowers shortly pedicelled :—

Pod with 4-cornered joints, transversely plicate; calyx pubescent and ciliated..... *tctragonolohus*.

Pods with rounded joints; calyx ciliated only: --

• Joints of pod slightly moniliform, neither veined nor rugose :—

Leaves acute, linear or lanceolate ; pods 4-6-jointed

*buplcurijutm**.

Leaves obtuse, oblong-lanceolate ; pods 2-3-jointed

buplcurijoliHs var. *gruciU**.

Joints of pod turgid, moniliform, deeply transversely plicate:—

Stems suberect or ascending:—

Stems 1-2 feet, ascending, glabrous above beneath; lucernes dense..... *rugoxug*.

Stems 3-4 feet, suberect, persistently pubescent as are the leaves beneath ; racemes elongated ,... *rwjo*u** var. *Hcyneami*.

• Stems dwarf, diffuse; racemes short, dense :—

Stems, in the line, finely pilose

*nujom** var. *stynitifoUa*.

Stems and leaves beneath glabrous *rugosus* var. *minor*.

620. **ALYSICARPUS MONILIFER DC.; F. 1). I. ii. 157. *Hedysarum noniliferum*, F. I. iii. U6.**

^liotu Nagpur ; W. Bengal.

A small prostrate weed.

621. **ALYSICARPUS HAMOSUM Edgew.; F. B. I. ii. 7. *Hedysarum procumbens*, F. I. iii. 345.**

Western Behar.

A small prostrate weed.

622. *ALYSICARPUS VAGINALIS* DC. ; F. B. 1. ii. 158. *HechjsaruM*
vayinale F. I. iii. 345.
In most of the provinces.
A suberect weed, stems 1-3 feet high.
- 622/1. Var. *NUMMULARIFOLIA* Bak.; F. B. I. ii. 158; E. V-
A. 911.
In all the provinces.
A small prostrate weed.
623. *ALYSICARPUS PUBESCENS* Law ; F. 13. I. ii. 160.
Western Behar, very rare.
An erect weed, stems 1-2 feet high.
624. *ALYSICARPUS TKIT* VI:«\»«LOBUS* Edgew.; F. 13. I. ii. 159.
Behar.
A small prostrate weed.
625. *ALYSICARPUS BUPLEURIFOLIUS* DC.; F. B. I. ii. 158. *Hedy*
sarum gramineum F. I. iii. 846.
In all the provinces.
An erect, slender weed. *Beng. Pan-nata.*
- 625/2. Var. *ORACILIS* Bak.; F. 13. I. ii. 158.
Behar; Chota Nagpur.
An erect, slender weed.
- 62b. *ALYSICARPUS RUOOSUS* DC, 1\ JJ. 1. ii. IV». *ir.-.hmn'M**
bujrfeurifoliuHi F. I. iii. 346, not of Linn.
Chota Nagpur; C. Bengal; E. Bengal.
A suberect weed.
- 626/2. Var. *HEYNBANA* Bak. ; F. B. I. ii. 159. *Ut'dysiV^{atn}*
stjgravifolium F. I. iii. 347.
Behar.
An erect weed.
Var. *STYRACIFOLIA* Bak.; F. I. I. ' - '«" /A;/'*''''''''''
f/lumnceum F. I. iii. 347.
Chota Nagpur \ Behar; W. Bengal.
A diffuse, prostrate weed.
- 626/4. Var. *MINOR* Prain.
Chota Nagpur ; C. Bengal.
A small prostrate weed.

272. *Psoralea* Linn.

Herbs or undershrubs ; *leaves* 1-foliolate or pinnately 3-foli^o _{1,1}^{te}
(in Indian species); leaflets repand or toothed, gland-dotted¹ (in

Indian species); stipules large, stem-clasping, but hardly adnate to petiole; stipels 0. *Flowers* capitate, spicate, subracemose, or fascicled, rarely solitary, in the axils of reduced floral leaves; bracts membranous often 2-3 flowers to each; bracteoles 0. *Sepals* connate in a campanulate tube; teeth subequal or the lowest longest, the two upper often connate. *Petals* little exerted; standard ovate or orbicular, narrowed to a claw, sometimes auriculate at base; wings oblong, falcate; keel incurved, obtuse, petals only slightly connate. *Stamens* 10; vexillary filament free or connate with the rest; anthers uniform or alternately attached & higher and lower levels. *Ovary* sessile or shortly stipitate, 1-ovuled; style filiform or dilated below, incurved above; stigma terminal, small. *Fruit* an ovate, indehiscent lomentum. *Seed* often adnate to pericarp; strophiole 0.

⁶²7. PSORALEA CORYLIFOLIA Linn.; F. T. iii. MN : F. 1*. T. ii. 103; E. D. p. 1352.

In all the provinces.

An erect annual, 1-3 feet high. *Hind.* Babachi; *Bciiff.* Barachi, hakuchi; *Uriya* Bakuchi.

273. Cyamopsis DC.

Erect herbs, beset with laterally attached hairs; leaves pinnately 3-foliolate (in the Indian species); leaflets toothed; stipules small, setaceous; stipels 0. *Flowers* in axillary racemes; pedicels short, solitary; bracts caducous; bracteoles 0. *Sepals* 5, connate in an oblique tube; lowest tooth longest, setaceous. *Petal* caducous; standard obovate, sessile; wings oblong, not connate to the erect, obtuse inappendiculate keel. *Stamens* 10, all connate in a tube; anthers uniform, connective apiculate. *Ovary* sessile, many-ovuled; style incurved at tip; stigma terminal, stipitate. *Fruit* a linear, suberect pod, subquadrangular, acuminate, stipitate within. *Seeds* quadrate, compressed; strophiole 0.

⁶²8. CYAMOPSIS PSORALIOIDRS DC.; F. B. I. ii. 92; E. D. C. 2514.

Dolicliofahmformis F. I. iii. 316.

An annual crop.

A robust erect plant, 2-3 feet high. *Hind.* Guar; *Santal.* Bum ruher.

274. Indigofera iwim.

Herbs, undershrubs, or shrubs, with tufted, laterally attached hairs, occasionally with basifixed hairs intermingled; leaves odd-

pinnate, r
 la*^e, some^{^s} 811^!! T 1"foliolate . very rarely digitately **3-folio**
 except the terminal [^] 3*foliolate, leaflet" usually **opposite**
 Portly ad^{nate} . ^ T ^ ^ ^ alternafce, sti^pules usualy **small**
 Ov^o Purple, in axil^W "f*60118 or o_ * * " < usually * ^
 oelied in the axils ^ **spike** or race me8, solitary sessile or p**'
 co>*ate in a miⁿⁱ Mucous bracts; bracteoles 0: ^ ^ ^ ^
 West longest. P2³ Camp^{anuj} ate calyx; teeth subequal, or the
 sessile of clawed-[^] Caduco <S; standard ovate or orbicul[^]
 laterally gibbous ^ n s < Mong. light^{ly} adnate to the erect,
 h^h ee, the others connate; [^] or r^rred keeh * * " > " . W; vexillary **filament**
 Picu^{Ute}. Ovary sessile [^] anthers uniform, connective glan **d-like,**
 ardless but the connit[^] ^ Subsessil ^ 1-2 or many-ovuled; **style**
 ^ seeded", or ohl [^] *IMWe stl^{va} of ten p^{er}isillate. Fruit * < * * se,
 impressed several[^] ee^{ex} 7. 1 ^ S^{tr}ak^{ht} or[^] curved > 3-4 Wed[^] or
 cylindrical and truno<f[^] ee^{ex} 1 ^ S^{tr}ak^{ht} or[^] curved > 3-4 Wed[^] or
 Mate, or compressed or quadrate; strophiole 0;

Leaves simpler

- Leaves simpler
 i-seeded:—
 Pods recurved, sickle-shaped, mucricated along the ventral suture
 Pods globose, unarmed, minute **ata.**
- Pods 2-seeded **lia.**
- Leaves compound, odd-pinnate or digitate :—
 Leaves 3—one terminal and a lateral pair :—
 Leaves digita 3-foliol **ifoliata**
- Leaves pinna 3-foliolate -end leaflet stalked . -
 Pods short, 1 1/2 £ ded; flowers in dense sessile heads; 1 << flets
 oWanceolate, thinlv be^s cent^t; fth^{erb} ^ <> f^{er} * *
 s elongated, !^{vi} " ? e^s cent^t; fth^{erb} ^ <> f^{er} * *
 1 in -kng; leaflet T^g re 5 1 6 = 10 ^ ded; Jowen in no^{it} f * *
 Leaflets 5 of mo^e. J^{obovate} gley-silk^v; a woody undershrub... ""7 -
- leaflets distinctly **alternat**
 Leaflets silvery. **hoary**, V leave << sessile or nearly so.—
 sessile heads. 7-9-1 P^s 2-seeded; flowers in * "se
 Leaflets **sparselv** eⁿneaphyll<-
 s e^ssed-hir^{sute}) 5-9- pods straig^M, 0±0-
 * * rae^{mes} > ^ in ^ wlee ^fl< .
- Leaflets opposite—on^e ^, mi^{nal} and 2^{oor} ino^{ree} ^ **pairs** .—
 Ranches, petioleg ^, pods d^es^{Styl} 6 9 ^ ded with viscid, & &
 ••Wed hairs; racerC[;] ^ pods d^es^{Styl} 6 9 ^ ded with viscid, & &
 f*; pods : ainfl y to ul ^ 7; B- B- flow^{wd}; leaflets 7-9 of W""
 CP- 4dl 3 ^ ?^{tr}aj^h 100 2-seeded ; a diffuse J**
 viscosa-

*Branches, Petioles, and Pods not viscidly hairy :—[p. 430]

Stems and pods densely clothed with short, spreading pubescence ; racemes very dense, 2-6 in. long; leaflets 5-11, large, obovate ; pod short, straight, 6-8-seeded ; a suberect herb

hirsuta.

Stems and pods sparingly hirsute or grey-cunescens or glabrous:—
- Racemes 2-4-flowered, short, lax; leaflets always 5 ; stems 1/2 to 1 inches sparsely hairy, slender; pods glabrous, 8-12-seeded; a diffuse, tufted herb..... *glabra.*

Racemes many-flowered, elongated ; erect woody undershrubs or shrubs:—

*Flowers small; leaflets membranous; pods often recurved:—

Pods green, 8-12-seeded ; leaflets 9-13, obovate, green :—

Pods few, slender, 10-12-seeded, acute; leaflets hardly longer than broad ; racemes shorter than leaves

tūictoria.

Pods many, stout, 8-10-seeded, blunt; leaflets longer than broad; racemes as long as leaves. *xumatrana.*

Pods silvery, stout, 3-4-seeded; leaflets 7-9, obovate, often silvery beneath *articulata* var. *Houer.*

*Flowers large ; leaflets 13-17, subcoriaceous ; pods straight, 8-12-seeded, sutures thickened *nrborca.*

629. INDIGOFERA ECHINATA Willd. ; F. I. iii- 370; F. B. I. ii. 92.

Western Behar ; Chota Nagpur.

A diffuse branched annual weed.

630. INDIGOFERA LINIFOLIA Retz ; F. I. iii. 370; F. B. I. ii. 92 ;

E. I. 134.

In all the provinces except Chittagong.

A wiry tufted annual weed. *Hind.* Motiyari, torki;

631 T ^{Be}hangra ; *Santal.* Tandikhode baha.

• INDIGOPERA CORDIFOLIA Heyne; F. B. I. ii. 93; E. P. I. 121.

Behar ; Chota Nagpur.

632 T ^A diffuse branched annual weed.

• INDIGOPERA TRIFOLIATA Linn. ; F. B. I. ii. 96. *I. prontraia*
F. I. iii. 373.

Chota Nagpur; W. Bengal; C. Bengal.

630 T ^Perennial weed of waste places.

• INDIGOFERA GLANDULOSA Willd.; F. I. iii. 372; F. B. I. ii-94; E.D.I. 131.

Western Behar, rare.

An annual slender branching weed.

[*Indigofera*.

634. INDIGOFERA TRITA Linn. f.; F. I. iii- 371; F. B. I. ii. 96.
Chota Nagpur, rare.
A woody undershrub, 2-3 feet high.
635. INDIGOFERA ENNEAPHYLLA Linn.; F. I. iii- 376; F. B. I. ii. 94; E. D. I. 125. ^{fl. I.}
Chota Nagpur; W. Bengal.
A weed of waste places. *Hind.* Latahai.
636. INDIGOFERA ENDECAPHYLLA Jacq.; F. B. I. ii. 95.
Western Behar, rare.
A diffuse weed of waste places.
637. INDIGOFERA VISCOSA Lamk; F. I. iii. 377; F. B. I. ii. 95.
C. Bengal.
A tufted branching herb.
638. INDIGOFERA HIRSUTA Linn.; F. I. iii. 376; F. B. I. ii. 98.
Chota Nagpur; N. Bengal; W. Bengal.
A suberect herb, 2-4 feet high. *Hind.* Chhotasi ^{r phonka.}
639. INDIGOFERA GLABRA Linn. *I. fragrans* F. I. ii. 95.
pentaplylla F. B. I. ii. 95.
Chota Nagpur, very common.
An annual tufted weed.
640. INDIGOFERA TINCTORIA Linn.; F. B. I. ii. 99 partly ^{^ ^ ^}
Chota Nagpur; Behar: rare, not cultivated ^{i>}
A twiggy shrub. *Hind.* Jinjini. Ceylon ^{Indlg.} 379I
641. INDIGOFERA SUMATRANA Gaertn. *I. tinctoria* F. B. I. ii. 99 partly; E. D. I. 145: not of Linn. ^{eous in}
Cultivated, chiefly Tirhut; occasionally spontaneous in
Tamarisk jungles and on river-banks.
A shrub with twiggy woody branches. *Hind. & Beng.*
642. INDIGOFERA ARTICULATA Gouan var. HOUER. ^{T ccerulea}
F. I. iii. 377. *I. argentea* var. *ccerulea* F. B. I. ii. 99;
E. D. I. 109.
Behar; not now cultivated in our area.
A shrub with twiggy woody branches. ^{H**<*. buringj-}
ml. Surat Indigo.

Neither "Surat," fo
has displaced it,
"Guatemala" (of *I. tinctoria* • Three others "• *aome* T, • ^{l," which}
^{grown:} (*I. suf-*
^{arrecta}
"E. African" or "Natal" (*I. arrecta*

much like "Natal," like "Bengal," has 8-10-seeded pod, but is a
 leaflets are not obovate. The other two, like
 "Gatimala" straight, in
 acute, both the leaflets are more numerous and ovate-
 » while their pods are not silvery-grey and are more slender.

64 - INDIGOFERA ARBORKA Roxb.; F. I. iii. 381. /. *purpu-
 raacens* F. I. iii. 383. *I. elliptica* F. I. iii. 380. /. *violacea*
 F. I. iii. 380. *I. jmlchella* F. B. I. ii. 101 ; E. D. I. 141:
 hardly of Roxb.

Chota Nagpur, very common.

A shrub or small tree. *Hind.* Sakina, lakina; *Santah*
 Dane-huter, lili bichi.

-275. *Sophora* Linn.

Trees or Shrubs 5 *lTMve** odd-pinnate; leaflets subopposite or
 opposite; stipules lanceolate, deciduous; stipels setaceous or 0.
 Flowers in simple terminal racemes or leafy panicles;
 bracts caducous; bracteoles 0. *Sepals* 5, connate in an
 obliquely panulate calyx; teeth deltoid, very short,
 clawed, much exerted; standard wide-ovate or
 bilobed, wing oblong, oblique; keel oblong,
 straight, its segments imbricate or connate. *Stamens* 10,
 versatile. *Ovary* shortly stipitate, many-ovuled;
 stigma small, terminal. *Fruit* a moniliform,
 cylindrical or slightly compressed, rarely winged, coriaceous or
 woody. Pod. *Seeds* obovoid or globose; strophiole 0.

644 - SOPHORA BAKERI Clarke. *S. s.* F. B. I. ii. 251.

Chota Nagpur.

A shrub.

276. *Ormosia* Jacks.

Shrubs or Trees 5 *lTMve** odd-pinnate; leaflets opposite; stipules
 usually 0. *Flowers* in terminal panicles; bracts
 minute, linear. *Sepals* 5, connate in a short
 panulate tube; teeth long, the upper two shortest and widest,
 connate. *Petals* little exerted, all short-clawed; standard
 keel; wings oblong, obtuse, as are the usually imbricate
 petals. *Stamens* 10 or by abortion 5-9, free, all fertile or 2-5
 ovules; anthers versatile. *Ovary* subsessile, 2-many-
 angled style filiform; stigma introrse, oblique. *Fruit* an oblong

[Ormosia.

or occasionally elongated pod, woody or coriaceous, continuous or septate within. *Seed* obovate or oblong, arillate 01 shining; f unicle cartilaginous.

645. ORMOSIA ROBUSTA Wight; F. 13. I. ii. 252.

Chittagong.

A large tree ; seeds arillate.

277. Dalhousiea Grab.

A straggling or scandent shrub ; *leaves* 1-foliolate; leaflet large; stipules ovate-lanceolate ; stipels 0. *Flowers* in axillary or terminal, sometimes branching corymbs; bracts like discs but rather larger, hiding the flowers. *Sepals* 5, connate, panulate calyx ; teeth very short, deltoid. *Petal* almost sessile; standard orbicular; wings oblique, petals obtuse, slightly incurved, subconnate. *Stamen** 10; filaments free; anthers uniform, versatile. *Ovary* subsessile, style slightly incurved ; stigma small, ternate. *Fruit* an obliquely oblong, much impressed, coriaceous Pod. continuous within. *Seeds* 2-3, suborbicular, compressed; strophiole 0.

646. DALHOUSIEA BRACKATA Grah.; F. 13. I. ii. 817.

Chittagong.

A subscandent shrub. Vernac. Gupun.

Suborder II. CJESALPINIE.

Trees or shrubs, rarely herbs; *leaves* very rarely 1-foliolate, usually pinnate or 2-pinnate, with often numerous leaflets ; stipels 0 or very rare. *Flowers* irregular, rarely hermaphrodite, never capitate, very rarely spicate. *Stamens* 4 from union of the upper pair, separate as far as the middle, the short or elongated disk, usually much below the middle, into distinct, imbricate, rarely valvate lobes ; very rarely connate above the middle and beyond the disk in a *Petal* 5 or fewer by abortion, rarely 0, the upper others variously imbricate, the lowest pair not connate. *Stamens* 10 or fewer by abortion, rarely numerous; free or some or all shortly or distinctly connate. *Carpel* free or adnate by a gynophore to the disk lining the calyx-tube. *Seed* without albumen.

Leaves simply pinnate (ISwthhnia) 1-foliolate :—
Anther basifixed; petals 5 ; leaves even-pinnate.....CaBsia.

Anth
ers versatile :-

Corolla complete, with 5 petals ; calyx-lobes 5 ; stamens free :—
Leaves 1-foliolate, 2-lobed; stamens 10 or 3 or 1; seeds albuminous. Bauhinia.

Leaves even-pinnate, 2-3-, rarely 1-jugate; stamens 10 or many; seeds without albumen.....Cynometra.

Corolla incomplete, with petals fewer than -5 or 0; leaves even-pinnate :—

Petals absent :—

Calyx-lobes 5, green; stamens 10; leaflets 1-3-jugate; flowers small.....Hardwickia.

Calyx-lobes 4, coloured"; stamens 3-8; leaflets 4-6-jugate; flowers showy. Saraca.

Petals Present; calyx-lobes 4 :—

Petals 3; stamens 3, monadelphous; leaflets many-jugate, small.....Tamarindus.

Petals 1; stamens 3, free ; leaflets few-jugate, large. Intsia.

Leaves pinnate; anthers versatile:—

Stamens 5 ; calyx-lobes equal; leaves with a distinct main-rachis

Acrocarpua.

Stamen
s 10 :—

Leaves * with a short, spinescent main-rachis, the 4-8 pinnae simulating a fasciculus of simply pinnate leaves; calyx-lobes subequal

Parkinsonia.

Leaves with a distinct main-rachis :—

Calyx-segments valvate :—

Calyx-lobes subequal, green.....Poinciana.

Calyx-lobes unequal, the 4 upper connate, the lower free, all coloured. Colvillea.

Calyx-segments imbricate, very unequal, the lowest large, boat-shaped

> and enclosing the others:—

Pod winged.....Mezoneuron.

Pod wingless...1.1.1.1,.....Caesalpinia.

>

278. Cassia Linn.

Pe
Stems, Shrubs, or, less often, herbs; leaves even-pinnate;

*C
es
P
0; inter-foliolar glands often present.

ravel
y
Senm
Gn
usua
% showy, in axillary racemes or terminal panicles,

SUbsolit
y axillary ; bracts and bracteoles present, various.

*als 5 >> imbricate above, at the base very shortly connate in a

disk-lined tube. *Petals* 5, imbricate, spreading, subequal lower larger, the upper inmost in bud. *Stamens* 10, and equal, or the 3 lower larger than the 7 upper, or perfect, the 3 upper much smaller and sterile, or 5 alternate stamens reduced or absent; anthers uniform or the 3 lowest stamens longer; locules dehiscing by an apical or short chink, rarely by a basal opening. *Ovary* sessile or tate, free within calyx-tube, often curved, many-ovule short or long; stigma terminal, capitate or truncate, rarely or swollen. *Fruit* a terete, woody lomentum, septate a flattened pod, woody, coriaceous or membranous, and septate or occluded within, occasionally longitudinally externally. *Seeds* transverse, rarely longitudinal, horizontal vertically compressed, occasionally subtetragonous, albuniino

•Sepals broad, obtuse :—[p. 437].

Pods indehiscent, woody, terete; stamens 10, all fertile, the 3 larger than the rest; trees :—

Leaflets 4-8 pairs, large; flowers yellow, in long racemes; deciduous, minute.....

Leaflets 6-12 pairs, medium ; flowers pink, in short corymbs; large, persistent.....

Pods dehiscent, compressed, rarely (*G. bicipsulavk*) turgid and subterete :—

Stamens 10, all perfect; anthers subequal; a shrub.....

Stamens only 7 perfect:—

fLeaf-rachis furnished with glands :—[p. 437]

Leaves with one large gland near base of common petiole :—

Leaflets 3-5-jugate, ovate-oblong ; pods flattened, between the seeds.....

Leaflets 6-12-jugate, oblong-lanceolate ; pods slightly turgid, not impressed between the seeds :—

Branches green.....

Branches purplish; leaflets smaller...*Sophera* var. *purpurea*.

Leaves with one or more glands on the main-rachis, between the bases of leaflets :—

Stipules large, foliaceous, persistent; a tall shrub

auriculata.

Stipules narrow, caducous :—

Stamens very unequal; pod thick, membranous, terete; seeds 2-seriate ; leaflets obtuse, 3-4-jugate ; a shrub [p. 437]

bicapsu.

Stamens subequal; pod long, slender, 1-seriate; leaflets obtuse, 3-jugate; Leaflets glauoescient beneath, 2 glands, 1 between each Leaflets green beneath, not 1 gland, between lowest pair of leaflets

Leaf-raohis without any glands:— [P- 436] Poa with a broad wing down the middle of each very large, oblong; flowers in dense, spicate heads,

Pod with no wing; leaflets medium, ovate-oblong; flowers in racemed corymbs; trees :—

Stipules persistent, foliaceous; sutures of pod thin

Stipules caducous, minute; sutures of pod thickened

Pals narrow, acute; pod small, ligulate, dehiscent, low

ershrubs or herbs :- [p. 436]

allets 2-jugate, medium, ovate, membranous,

Leaflets very many, small, narrow, rigidly coriaceous, close

Gland of petiole stipitate :—

Stamens 5.....

Stamens 10.....

Wand of petiole sessile.....

*7. CASSIA FISTULA Linn.; F. I. iii. 888; F. B. L ii- 261; E. D.

C. 756.

.In aU the provinces; often only

A medium tree. Amaltas or Indian

& Hind. Amaltas; Santal. Nurnio, urty 261; E. p.

648 CASSIA NODOSA Ham.; F. I. ii. 336; F. B. L u-

C 777.

Chittagong; often planted elsewhere.

649 **A*ree. n C. 769. Senna

CASSIA GLAUCA Lamk; F. B. I. ii- 265; ^ »•

arborescens F. I. ii. 345.

Blanted.

A s ^ u b.

650. CASSIA OCCIDENTALIS Linn.; r. & A- .. ofi o . E. T>. C. 780

Senna occidentals IM. «• *^43_

In all the provinces, in waste P^{lac} ^ 9, - . Belg. Kal-

A diffuse undershrub. &nd. Kasondi,

kashonda*

651. CASSIA SOPHERA Linn.; F. 13. I. i. 262; E. D. C. 787.
Senna sojihora F. I. ii. 347. *S. esôrOrnta-F.* I ii. 346.
 In all the provinces, in waste places. ashon^.
 A small shrub, fftwd. Kasondi; Beng. Kalk-
 651/2. Var. PURPURBA Bak.; F. B. I. ii. 263. *Sen** 1
 F. I. ii. 342. *a purpurea*
 Behar; W. Bengal.
 A small shrub. Beng. Lai Kalkaahonda. *itauric*¹¹,
 652. CASSIA AURICULATA Linn.; F. B. I. ii- 26B. *oen*
lata F. I. ii. 349. -evinces-
 In hedges and near villages in most of the pi
 A tall shrub. Hind. Tarwar. *tcntw** *bicap**
 653. CASSIA BICAPSULARIS Linn.; F. B. I. ii. 263. *
aularis F. I. ii. 342. nlentifr
 In C. Bengal, near villages; introduced, no* i
 A bushy shrub. p. p. 0. 797.
 654. CASSIA TORA Linn.; F. B. I. ii. 263 partly; J^
Senna Tora F. I. ii. 340. te places.
 In all the provinces, very common; in was
 An annual fetid weed. *Vcrndc.* Chakunda.. 263 pftvtly,
 655. CASSIA OBTUSIFOLIA Linn. *C. Tora* F. B. I- "•
 not of Linn. *Senna toroides* F. I. ii- 340.
 Chota Nagpur.
 An annual weed. *SantaL* Chakoada arak. *Senna*
 656. CASSIA ALATA Linn.; F. B. I. ii. 264; E. D. 782,
alata F. I. ii. 349. ncoin^{1Uon<}
 In most of the provinces, near villages; not ui ^m(1C.
 A shrub, with thick, rather soft, downy branches. - ^
 Daclmardan. -QJ
 657. CASSIA TIMORENSIS DC.; F. B. I. ii. 265; E. D. 785.
 Planted, rather generally, especially in the eastern l *
 A small tree. 785.
 658. CASSIA SIAMEA Lamk; F. B. I. ii. 264; E. D. 785.
Senna sumatrana F. I. ii. 347.
 Planted in most of the provinces.
 A tree. *Senna*
 659. CASSIA ABSUS Linn.; F. B. I. ii. 265; E. D. C. 728.
Absus F. I. ii. 340. *S. exigua* F. I. ii. 339.
 Chota Nagpur; W. Bengal; Behar; Tirhut.
 An erect annual, 1-2 feet high. Hind. Chaksu, banar-

fertile stamens more than one :-

fertile Stamens 10; calyx with a very short tube; pod narrow; without tendrils:—

Pod dehiscent; calyx-limb spathaceous :-

Flowers white, in close axillary racemes; calyx-limb subcordate; Worthed at the tip; pod ribbed near upper suture. Flowers yellow, the standard red-blotched within, usually Hilary pairs; calyx-limb entire; pod not ribbed near suture.

Pod indehiscent:—

Calyx-limb spathaceous ; flowers in lax racemes ; pod flat, venulose and not long-beaked :~

Leaves 1-cleft, 2-25 in. wide, 2 in. long or larger; pod 1 in. racemose.

Leaves 1-cleft, 7-15 in/wide, 1-1.5 in long or less; pod 1 in.

Calyx-limb 5-cleft; flowers in short corymbs ; pod nearly straight, closely reticulate-venulose along the centre, beaked by the persistent style.

Fertile stamens almost 'always 3'; rarely 4-5 :—

Calyx-tube very short; limb 5-cleft:-

Flowers very minute, white, in copious terminal panicles; pod minute, distinctly stalked, 1-2-seeded, under 2 in. long ; anthers with tendrils and flattened stems with tense margins and a wavy undulate centre; lobes of leaves usually acute at apex. Flowers medium, yellow, in terminal racemes; pod at length dehiscent, very shortly stalked, 6-8-seeded, 5-10 in. long; anthers without tendrils; lobes of leaves indistinct, rounded at apex.

Calyx-tube elongated :—

Flowers medium ; petals densely silky; large climbers with tendrils; leaves deeply cleft:—

Leaves 9-nerved with acute lobes, almost glabrous beneath; catkins

limb regularly 5-cleft; pod indehiscent, 2-4-seeded

Leaves 11-nerved without lobes, densely pubescent beneath.

Flowers large ; Calyx 1-cleft; at length dehiscent, 8-12-seeded.

lobes rounded ; Petals glabrous 5-angled, not deeply

Calyx-limb 5-cleft; pod late of dehiscing :-

flowers at anthesis; calyx-limb spathaceous, equalling the cylindrical tube.

Calyx-limb 5-cleft, longer than the turbinate tube.

Fertile stamen 1; pod flat, late of dehiscing, long, fusiform, limb spathaceous

Shrub; tendrils 0.

- ⁶63. BAUHINIA ACUMINATA Linn.; F. I. ii. 324; F. B. I. ii. 276 ;
E. D. B. 295.
Planted and self-sown in village shrubberies in all the
provinces.
A shrub. *Hind.* Kanchnar ; *Beng.* Kanchan.
- ⁶64. BAUHINIA TOMENTOSA Linn.; F. I. ii. 323 ; F. B. I. "• ^ >
E. D. B. 334.
Planted in most of the provinces.
A shrub. *Hind.* Kanchnar.
- ⁶65. BAUHINIA RACEMOSA Lamk ; F. B. I. ii- 276 ; E. D. B. 31b.
***B. parviflora* F. I. ii. 323.**
Chota Nagpur.
A small bushy tree with pendulous branches.
Beng. Banraj ; *Hind.* Gurial ; *Kol.* Kaimu ; *Uryya*
Ambhota.
666. BAUHINIA RUFESCENS Lamk ; F. B. I. ii. 277.
In gardens, especially in the central parts.
A shrub.
- ⁶67. BAUHINIA MALABARICA Boxb.; F. I. ii. 321; F. B. I. u. 277 ;
E. D. B. 304.
Chota Nagpur.
A medium-sized, bushy tree. *Beng.* Karmai ; *Hind.*
Amlosa ; *Uryya* Gumbati ; *Kol.* Laba.
- ⁶68 BAUHINIA ANGUINA Roxb.; F. I. ii. 328; F. B. I. u. 284 ;
E. D. B. 297.
Chittagong.
A large climber. *Vernac.* Nagpat.
- ⁶69. BAUHINIA RETUSA Ham.; F. I. ii. 322; F. B. I. "• 279,
E. D. B. 330.
Chota Nagpur.
A small tree. *Kol.* Laba ; *Oraon* Twar ; *Hind.* Kania.
670. BAUHINIA MACROSTACHYA Wall.; F. B. I. ii. 281: &• »-
B. 301. *J5. scandens* F. I. ii. 326.
Chittagong.
An extensive climber. *Beng.* Ganda-gila.
671. BAUHINIA VAHLII W. & A.; F. B. I. ii. 278; E. D. B. ^.
B. racemosa F. I. ii. 325. **Malghan ;**
W. Bengal ; Chota Nagpur.
An extensive climber. *Beng.* Chehur ; *HtnA*
Uryya Sheoli.

672. BAUHINIA VARIKGATA Linn.; F. I. ii. 319; F.* B. I. ii. 284.
B. Candida F. I. ii. 318. [^]itilagong;
 ChotaNagpur; Behar; Tirhut; N.Bengal;
 in other provinces often planted.
 A medium-sized tree; the flowers vary a g^o. [^]fed [^]n
 colour; those trees with pure white flowers constitute
B. Candida Roxb. *Beng.* Rakto kanchan, [^]ta [^]. *Jingya*;
 chan; *Hind.* Khairwal; *Kol.* Singya; *San*
Uriya Borara. ^r B [!] * ²⁸⁴.
673. BAUHINIA PURPUREA Linn.; F. I. ii. 320; * ^r B [!] * ²⁸⁴.
B. triandra F. I. ii. 320. [^]in ei* V*^o,
 Chota Nagpur; Behar; N. and E. Bengal; i
 vinces often planted. ^tw^o colQ ^{irr}t
 A medium-sized tree; the flowers are ot th pu ^{lis}b'
 purplish-pink and pale purple. The trees ^{wi} [^] [^] y;
 pink flowers, which only occasionally oc ^{ci}
 always planted, constitute the true [^]. i ^{urea}; ^{the}
 pale-flowered trees constitute *B. triandra*. ^{Roxb.}, ^{which}
 is more commonly planted than the ot. ^h ⁱg ^{the}
 only wild form in our area, ffiwd. Kalian, ^{Beng.} ^{airal},
 Deva kanchan; *Santal.* Singyara.
674. BAUHINIA MONANDRA Kurz; P. B. I. ii. 285*
 Occasionally planted. # T» I ti k^{ft} hchan.
 A shrub; native of Madagascar. *Beng.* J^ea

280. *Cynometra* Linn.

Trees or large shrubs; leaves odd-pinnate; leaflets few, ^{op}?^o
 site, coriaceous; stipules caducous; stipels 0. ^{gra}fij ^lt &
 short, often fascicled racemes, axillary or on oia ^{up}w^ar[^]9*
 ovate, dry, imbricate, at length deciduous, decreasing [^]y 4,
 bracteoles 0 or membranous and coloured. *Sepals* ^{us} [^] ^{beg}
 rarely 5, connate in a very short tube with subbasal ^{dis} [^] ^{dedi}
 oblong, imbricate, at length reflexed. *Petals* 5, ^{al}m[^] ^{al} ^t ^{ens} 1 &
 oblanceolate, subequal, or the 2 lowest smaller. [»] ^gjial[»]
 rarely many; filaments free, filiform, exserted; anthei [^] [^]
 oblong, versatile; dehiscence longitudinal. *Ovary* ^{Sc} [#] [^]
 shortly stipitate, 2-ovuled, free or obliquely adnate to dis ^h [^] ^f
 filiform; stigma terminal, capitate or truncate. *Fr*wit a [^] [^]
 slightly ovoid or subreniform, indehiscent lomentum, or ^{re} [^]
 pod, with very thick, tough, somewhat fleshy pericarp-

thick or
 cotyl 1 compressed, occupying the whole cavity of the fruit;
 sions thick, fleshy; ajbmnen 0; hilum ventral.

0; leaf-rachis glabrous:—

axig. on stem and thick branches in racemes with a produced
 Flowe' pedicels glabrous; leaves 1-jugate.....cauliflora.

P'odi' s' at non s' the leaves in laxly umbelliform corymbs without a
 i'ced axis; pedicels puberulous; leaves 2-jugate

Stamens in ranriflora var. miwoitoMes.
 ~0; leaf-rachis puberulous; leaves 3-jugate.....polyandra.

10- CYNOMKTBA CAULIFLOKA Linn.; F. J3. I. ii. 268; E. T).
 C 2572.

Occasionally planted.

small tree.

676 - A

• CYNOMETRA RAMIFLORA Linn. var. MIMOSOIDES J3ak.; F. B. I.
 II- 267. C. ramiflora E. D. C. 2577.

Sundribuns.

677 - A medium-sized littoral tree. Beng. Shingar.

• CYNOMETRA POLYANDRA Roxb.; F. I. ii. 372; F. B. I. ii. 268;
 E- D. C 2574.

vhittagong; occasionally planted elsewhere.

A medium-sized tree. Vernac. Peng.

*- 281. Hardwickia Roxb.

Tree; leaves
 stipules even-pinnate; leaflets 1-3-jugate, coriaceous;
 raees small, caducous; stipels 0. Flowers small, in paniculate
 5 j' facts' minute; bracteoles under calyx scale-like. Sepals
 orbic' often 4j hardly connate round the basal disk, petaloid,
 nif T' ar much imbricate. Pe^Z* 0. Stamens 10 or 8, alter-
 *di - I-nger and shorter; anthers versatile, dehiscence longi-
 Pelt' na, Vari sessile, free, 2-ovuled; style filiform; - stigma
 a e or capitate. Fruit a dry lomentum or follicle with the
 upper ovule alone developed into a seed which fills the whole
 cavity. or o ly the tip of the fruit, the base then being thin and
 samaroi(- Seed pendulous, obovate, somewhat compressed;
 albumen 0.

678- HARDWICKIA BINATA Boxb.; F. I. ii. 423; F. B. I. ii. 270;
 E- D. H. 16.

Behar.

A tall tree. Vernac. An Jan.

[Saraca.

282. *Saraca* Linn.

Trees or large shrubs; *leaves* even-pinnate; leaflets coriaceous; stipules small, connate, intrapetiolar; stipels 0. *Flowers* racemose, in condensed panicles, usually from old wood; bracts small, deciduous; bracteoles subsistent, coloured. *Sepals* 4, connate in a long, disk-bearing tube; the lobes oblong, hardly petaloid, much imbricate. *Petals* 0. *Stamens* usually 7, filaments long, filiform; anthers versatile; dehiscence longitudinal. *Ovary* stipitate, stipe adnate below to disk and produced beyond it; ovules many; style long, filiform; stigma lobed. *Fruit* a flattened, oblong, firmly coriaceous or woody pod continuous within. *Seeds* thick, flattened or subterete; albumen 0.

679. *SARACA INDICA* Linn.; F. B. I. ii. 271; J. P. s. 86¹¹*Jonesia Asoca* F. I. ii. 218.

Generally planted; wild in Chittagong.

A low tree. *Vernac.* Asoka.283. *Tamarindus* Linn.

A tree; *leaves* even-pinnate; leaflets opposite, stipules minute, caducous; stipels 0. *Flowers* in racemes, at the ends of branches; bracts ovate; bracteoles ovate-oblong, somewhat coloured. *Sepals* 4, connate below in a narrow, disk-lined tube; lobes lanceolate, membranous, imbricate, the uppermost inmost, subsessile and narrow, the ovate lateral, the 2 lowest represented by bristles. *Stamens* 3 perfect, connate in a sheath split above, with the portion of filaments short; anthers oblong, versatile; dehiscence longitudinal; staminodes a few minute bristles on the sheath. *Ovary* stipitate, many-ovuled; stipe adnate to disk in the tube; style filiform; stigma terminal, sub truncate, oblong or linear indehiscent, incurved, thick, subcompressed; lomentum with brittle epicarp, pulpy mesocarp, and leathery endocarp, septate within. *Seeds* obovate-orbicular, conipitate; testa firm; albumen 0.

680. *TAMARINDUS INDICA* Linn.; F. I. ii. 215; F. B. I. E. D. T. 28. .. 073;

Generally planted.

A tall tree. *Beng.* Tintuli, tinturi; *Hind.* Amli, *itali,

286. *Parkinsonia* Linn.

Small armed trees; *leaves* 2*pinnate with a very short, ^{sp^{neg.}} ⁱⁿ ^{neg.} cent main-rachis; pinnae with much flattened racis, ⁱⁿ ^{neg.} leaflets many, small; stipules spinescent; stipels ⁱⁿ ^{neg.} long-pedicelled in short, lax, axillary racemes; ⁱⁿ ^{neg.} caducous; bracteoles 0. *Sepals* 5, connate in a ⁱⁿ ^{neg.} tube; lobes slightly unequal, membranous, little ⁱⁿ ^{neg.} *Petals* 5, spreading, the uppermost inmost rather ⁱⁿ ^{neg.} rest. *Stamens* 10, villous below; anthers versatile; ⁱⁿ ^{neg.} longitudinal. Ovary shortly stipitate, many-ovuled, ⁱⁿ ^{neg.} from disk; style filiform, infolded in bud; ⁱⁿ ^{neg.} minute. *Fruit* a linear, torulose pod, opening ⁱⁿ ^{neg.} coriaceous or almost woody. *Seeds* oblong, elonga ⁱⁿ ^{neg.} nous; hilum almost apical.

683. PARKINSONIA ACULEATA Linn.; F. 13. I. ii-²⁶([^]); ⁱⁿ ^{neg.} p. 322.

Planted, but also as if wild in all the provinces.

A large shrub. Vernac. Belati kikar.

287. *Poinciana* Linn.

Tall trees; *leaves* 2-pinnate; leaflets many, ⁱⁿ ^{neg.} small; stipels 0. *Flowers* showy, in terminal coryn ⁱⁿ ^{neg.} small, caducous; bracteoles 0. *Sepals* 5, connate in a ⁱⁿ ^{neg.} disk-lined tube; segments valvate, subequal. *Petals* ⁱⁿ ^{neg.} imbricate, subequal or the uppermost innermost ⁱⁿ ^{neg.} *Stamens* 10, decimate, free; filaments villous below, ⁱⁿ ^{neg.} uniform; dehiscence longitudinal. Ovary sessile, many ⁱⁿ ^{neg.} free from the disk; style filiform or short clavate; ⁱⁿ ^{neg.} ciliate. *Fruit* a flattened, woody, straight pod, ⁱⁿ ^{neg.} continuous within. *Seeds* transverse, oblong, albuminous; hilum ⁱⁿ ^{neg.} small.

684. POINCIANA REGIA Boj.; F. B. I. ii. 260; E. D. P. ⁱⁿ ^{neg.} 35.

Planted in most of the provinces.

A medium-sized spreading tree. The Gold-Mom ⁱⁿ ^{neg.} Tree.

This was introduced to India from Mauritius; the general ⁱⁿ ^{neg.} that it is a native of Madagascar does not appear to be correct, ⁱⁿ ^{neg.} it came to Mauritius is not exactly known.

288. *Colvillea* Boj.

Tall trees; *leaves* 2-pinnate; leaflets many, small; ⁱⁿ ^{neg.} small; stipels 0. *Flowers* showy, in dense subpaniculate ⁱⁿ ^{neg.} racemes

with thickened rachis; bracts membranous, coloured, caducous; bracteoles 0; *Seeds* connate in a very short, disk-lined tube; *Petal*s 5, *induplicate-valvate*, the 4 upper united for some distance after the flower opens, the lowest usually quite free. *Petal*s the uppermost innermost widest, the lateral obovate, the outermost narrow. *Stamens* 10, decimate, free; *Ovary** villous below; anthers uniform; dehiscence longitudinal. *Style* sessile; many-ovuled, free from the disk; stigma somewhat 2-lobed; stigma small, terminal. *Fruit* a thick, straight, gated, transverse, oblong; hilum small.

685 n

COLVILLEA RACEMOSA Boj.

- Planted occasionally in most of the provinces.
- A medium-sized tree; introduced from Mauritius.

289. Mezoneuron Desf.

Prickly, woody climber; leaves abruptly 2-pinnate; pinnules small; stipules obsolete; *Stamens* 0. *Flowers* racemose, racemes axillary; bracts narrow; bracteoles 0. *Style* 5, very oblique, disk-lined tube; segments imbricate, the uppermost large, boat-shaped. *Petal*s 5, orbicular, much imbricate, subequal, or the uppermost innermost. *Stamens* 10, declinate, free, glabrous or pilose; *Ovary* sessile or short; dehiscence longitudinal. *Ovary* sessile or apiculate, 2-many-ovuled; stipe or base free from disk; *Style* clavate; stigma terminal, minute or 2-lobed and ciliate. *Fruit* a thin, flattened *Amentum*, longi-pressed, orbicular or reniform; albumen 0.

Pod 1-seeded; leaflets 4-5-jugate, large, ovate-acute; *stamens* much exceeding the calyx:—

Leaflets 7 or less long; wing of pod 4 in. or less wide... *cucullatum*.
 Leaflets 3 or more long; wing of pod 5 in. or more wide

Pod 4-seeded; leaflets 9-11-jugate, small, oblong, obtuse, 5 in. long or less; 5 *stamens* slightly exceeding the calyx..... *ennactophyllum*.

686. MEZONEURON CUCULLATUM W. & A.; F. 13. I. 258.

Cucullata F. I. ii. 358.

- ChotaNagpur; N.Bengal.
- A very extensive climber.

W6/2. Var. GBANWS Bak.; p. B. I. ii. 258.

Behar; Chota Nagpur, Chittagong.

fi«7,, A Very extensive climber.

687. MKZONEURON EKNBAPHYLLOM W. & A.; F. B. I. »• ^

tccsalpmia enneaphylla F. I. ii. 363.

knittagong.

A climbing shrub.

290. Caesalpinia Linn.

^{T₁}
 2 n i r T T Shnil>S Or clim bers, prickly or unarmed; leaves abrop">,
 ST 1 P% P'«^te; leaflets many small, «*»•
 firmer larger; stipules various; stipels 0. lowers often sho*y-
 ^ lax racemes in the upper leaf-axils or in dense panicles at en&
 a s W ? I ^ a Ct S 0 adu 00 US, b racteoles 0. Sepals 5, connate *
 WnLf; Ded tube; lobes 5, imbricate, the lowest ltfg*¹
 spncave outermost. Petals 5, orbicular or oblong, usually obwj-
 S t a ^ X t ^ Une<1Ual, imbricate. *e uppermost inner.^;
 aX 10 free, declinate; filainents villous or glandular at base
 ^ZX-T\ dehiSeenCe ^tudinal. oJry sessile, its ^
 cWa e: dMk> few OT uled; style usually terete, filiform ^
 obkn! : 8*lgTY, terminal, mTMte. truncate or concave. Fr*"
 or hmiW*, thin> flaUened or pod) sometimeg SP.»y
 outside, usually occluded between the seeds, or an indehiseei*
 coriaceous or ali uost fleshy, subturgid lomentum. Seeds tra"⁸
 verse, ovate to orbicular; albumen 0.

Pod armed with abundant wiry prickles; petals narrow jioniii'^

Pod unarmed; petals broad:—

Pod dry, thin-valved with

Leaflets few, coriaceous, large; pods short; seeds solitary or »«•»!¹

Leaflets many, only small; pods
longer than br subcoriaceous,

Stands ,ong, far exserted; petals ,ongolawed; pods thin/* *
shap pulcherrima.

petals short-clawed:—

pointed, with a recurved beak..... S«i"/";

Stipules large; upper petal smaller";hanhe'others; P°*

narrowly winged along the ventral suture. -nd-pointed, wj
a straight beak sepiar

Pod somewhat fleshy, thick-valved, with widened sutures, turgid,
torulose, 2-4-seeded..... digyna.

⁶⁸& C^SALPINIA BONDUCELLA Fleiii. ; F. I. ii. 357 ; F. B. I. ii- 254; E. D. c. 6.

N. and C. Bengal; Chota Nagpur; Sundiibuns.

An extensive climber. *Hind.* Kat-karanj ; *Beng.* Nata karanj; *Santal.* Bagni.

⁶⁹9. C^SALPINIA NUGA Ait.; F. B. I. ii. 255 ; E. D. C. 80.
G- panioulata F. I. ii. 364.

Sundribuna; Chittagong, coast.

Ad ^n extensive, shrubby climber.

⁷⁰0. CUSSALPINIA PULCHERRIMA Sw.; F. B. I. ii. 255; E. D. C. 32.
Poinciana pulcherrima F. I. ii. 355.

In all the provinces, planted. —

A shrub in gardens or hedges; flowers either red or ftq, y^{ello}w. *Beng.* Krisha chura.

^{oyi}1. C^SALPINIA SAPPAN Linn.; F. I. ii. 357; F. B. I. ii. 255 :
E. D. c. 35.

-Planted in some of the provinces.

A large shrub or small tree. *Hind.* and *Beng.* Bakam, Patang > *Santal.* and *Hind.* Teri; *Uriya* Bokmo.

⁶2. C^SALPINIA SEPIARIA Roxb.; F. I. ii. 360; F. B. I. ii. 256; £• I). C. 42.

In most of the provinces, especially in the western and northern; used as a hedge-plant.

A shrubby climber. *Hind.* Uri, relu, kando.

^{6q}3. C^SALPINIA DIGYNA Rottb< . F. B. I. ii. 256; E. P. O. 26.
G- oleosperma F. I. ii. 356.

Chota Nagpur; Behar ; N.Bengal; Chittagong.

A climber. *Beng.* Ainal-kochi; *Hind.* Vakeri-mal.

Suborder III. MIMOSE^E.

^T nafc GeS or shrubs » rarely herbs; leaves always compound, 2-pin-
^e or rarely simply pinnate. Floivers regular, sometimes
^{pol} moue, almost always capitate or spicate. Sepals 5, some-
^{til} nes 4, rarely 3 or 6, valvate, very rarely imbricate, connate
^{be} U^a 5 into ofched or 5-lobed, less often 4-, 3-, or 6-lobed calyx
^{Wiir} no disk llling the tube » or se P als free Petals as ma Uy aS
^{sen} als, valvate, free, or sometimes connate in a lobed corolla,
^h pogynous or slightly perigynous. Stamens as many as sepals
^{oi} petals or both, sometimes numerous, free or monadelphous or

BENGAL PLANTS.

adnate to tube of corolla. Carpel free. Seeds sometimes with little or 0 albumen; embryo with flat cotyledons.

Anthers gland-tipped; stamens 5-10.—

Calyx-teeth short, imbricated; filaments usually either connate at base; inflorescence capitate, heads large; trees. Calyx valvate; filaments free :—

Inflorescence elongated :—

Large tendril-bearing climbers; leaves with few leaflets; pods very long and wide; seeds huge; flowers sessile; leaflets opposite.

Entolobium

Trees or shrubs without tendrils; leaves with many leaflets; pods narrow:—

Flowers shortly stalked; leaflets fairly large, not contiguous, alternate on the secondary rachis; unarmed trees; pods narrow at length contorted. Adenanthera

Flowers sessile; leaflets small, opposite; armed shrubs:—

Pod turgid, with thick, edible mesocarp; leaflets small, contiguous. Prosopis

Pod thin, coriaceous, at-length contorted; leaflets minute, contiguous. Dichrostachys

Inflorescence capitate, heads small:—

Terrestrial or subaquatic herbs, with small, thin pods, opening by upper suture. Neptunia

Lush trees with large, thick, woody pods, late in dehiscing, opening by both sutures. Xylocarpus

Anthers not gland-tipped; calyx valvate, rarely 0:—

Filaments free :—

Stamens definite, many; petals, shrubs or undershrub

Pods straight, with capitate flowers and thin, coriaceous pods:—

Sutures straight, continuous valves, dehiscing through

Undershrubs with clavate stigmas. DMW

Pod straight or curved, with 4-ment valves and always indehiscent, persistent sutures. Mimosa

Stamens definite, numerous; petals capitate or

Acacia

Filaments more or less than petals; filaments usually indefinite, rarely only

between the seeds:— p. 451]

with thin valves:— p. 451]

Sutures thin; pod indehiscent or if dehiscent, the valves opening elastically [p 4 ... 5 ... 1 ...] A I b ^

Sutrea thickened; pod revolutely dehiscent, the valves opening elastically from apex to base [p. 450].....**Calliandra.**
 Pod twisted, with coriaceous valves [p. 450].....**Pithecolobium.**
 Pod septate between the seeds, indehiscent; valves spongy or fleshy,
 Olives thickened [p. 450]..... **Eliterolobium.**

291. *Parkia* R.Br.

Tall, unarmed trees; leaves abruptly 2-pinnate; pinnæ even-pinnate; leaflets very many, small, opposite; stipules minute; stipels 0. Flowers numerous, in dense, clavate or subglobose, ag-peduncled axillary solitary, or terminal paniculate heads; bracts ligulate, spatulate; lowest flowers male or neuter. Sepals 5, connate in a small tubular calyx, tube adnate to petals or free; lobes short, imbricate, somewhat 2-lipped. Petals 5, linear-spathulate, connate to the middle or free, valvate or subvalvate. Stamens 10, exserted, connate below, and there adnate to corolla rarely free from the petals; anthers oblong, gland-tipped; P^oUen clustered, the clusters 2-seriate. Ovary sessile or stipitate, anovuled; style filiform; stigma small, capitate, terminal. Fruit a large, flat, ligulate, ultimately dehiscing, coriaceous, or fleshy pod, sometimes long-stipitate. Seeds transverse; thick, compressed or ovoid.

Leaflets with two glands placed side by side; leaflets on each pinna 60-100 in pairs; heads subspherical..... *biqtinduloaa.*

W-jugate; heads subspherical.....

Leaflets with one gland; leaflets on each pinna 40-80 pairs; heads sometimes clavate..... *Roxburghit.*

^ PARKIA BIOLANDULOSA W. & A.; F. B. I. ii. 289. *Mimosa pedunculata* F. I. ii. 551.

Often planted.
tree.

e OS ^ t S' BOXBURGH G. Don; F. B. I. H 289- *Mimosa Uglobosa* F. I. ii. 551.

Chittagong; sometimes planted in Bengal.

A tall tree. Beng. Sapota.

292. *Entada* Adms.

Very large, woody climbers; leaves 2-pinnate, the ultimate pinnæ sometimes modified as tendrils without H ^ ^ L stipules; small, setaceous; stipels 0. Flower* in slender spikes, sometimes 8 the branches, sometimes paniculate; uniform herma^{phrodite}.

or polygamous; bracts minute, triangular or subulate ; ^{bract} [^]
 0. *Sepals* 5, connate in a campanulate calyx; teeth ^s
Petals 5, free or slightly connate, valvate. *Stamens* ^W ^{free} [^]
 little exserted, filiform; anthers shortly oblong, gland-tipped; ^{land,tip} ^P
 pollen-granules many. *Ovary* sessile, many-ovuled; ^s ^{le}
 filiform; stigma terminal, truncate, concave. *Fruit* a ^J ^{ib} ^{*}
 straight or curved, firmly coriaceous or woody lomentum ^{*} ^{oni}
 thickened, persistent, continuous sutures, pericarp separating ^{*} [^]
 the transversely articulated endocarp, which breaks ^a ^a) ^{all}
 1-seeded joints. fl«[^] large, orbicular, compressed, hilom ^s ^{*} ^D

696. ENTADA PURSJETHA DC. JB. *scandens* F. B. I. ii-²⁸⁷; *''

E. 219. *Mimosa scandens* F. I. ii. 554.

Chittagong; ChotaNagpur; Orissa.

A large climber. Beng. Gila ; Uriya Geredi.

293. Adenantha Linn.

Erect, unarmed trees; *leaves* 2-pinnate; pinnre opposite, bu ⁱ
 their leaflets alternate, even-pinnate ; stipules very minute, oaf ^u
 ecus; stipels 0. *Flowers* in slender, subspicate racemes, eit ^r
 sohtary axillary, or terminal and paniced; bracts 0 ; bracteoles ^v
Sepals 5, connate in a campanulate tube; lobes short. *Petal* ^{**}
 connate below, valvate. *Stamens* 10, free, hardly exserte ⁱ
 anthers oblong, gland-tipped; pollen-granules numerous. *Ovary*
 sessile, many-ovuled; style filiform; stigma small, terminal.
Fruit a linear, falcate, torulose pod, septate within, the ^{valves}
 coriaceous, much twisted after dehiscence. Seeds small, ^b rd,
 polished, pink or pink with black eye, often with a thin, ^P ^{*W}
 covering.

697. ADENANTHERA PAVONINA Linn.; F. I. ii. 370; F. B. I. ii-²⁸⁷;

E. D. A. 471.

Chittagong; Tippera.

A tree. Beng. Rakto-kanchan, ranjan.

294. Prosopis Linn.

Shrubs or trees, with scattered prickles; *leaves* evenly 2-pinnate;
 pinn» usually few-paired; leafletg ^{man} , ^{narrow}, coriaceous;
^S ^S ^T ^T [?] or ⁰ [>] Sometimes ^S [^]-scent [^] stipels 0 ; interf«H [^]
^y present but
 spikes or in subg ^{rac}
 teoles 0. *Sepals* ^{rac} ^{*} ^{rac}
 connate in a campanulate calyx; teeth short;

Petals 5, ligulate, valvate, subconnate at base. **Stamens** 10, free, [^]stipitate; filaments filiform; anthers ovate, gland-tipped. ^{•v}ovary stipitate or sessile, many-ovuled; style filiform; stigma ^{ter}terminal, small. **Fruit** a linear, compressed or subterete, ^{md*hl*}dehiscent lomentum, straight or twisted, septate within; mesocarp thick, ^{8p}perisperm; endocarp thin, firm. **Seeds** usually ovate, compressed.

698. *PROSOPIS SPICIGERA* Linn.; F. B. I. ii. 288; B. D. P. [^]
Adenanthium aculeata F. I. ii. 371.

Behar; sometimes planted in other provinces.

A small tree. *Hind.* Jhand; *Beng.* and *Uriya Shami*.

293. *Dichrostachys* DC.

^{Shr}ubs; branches here and there spinescent; *leaves* evenly 2-pinnate; ^{pinnis}pinnis even-pinnate; leaflets many, opposite, small; ^{stl}stipules lanceolate; stipels 0. **Flowers** in cylindrical, often nodding, ^{unc}uncolored spikes on short, axillary branchlets, the uppermost ^{fl}flowers ^{<?}yellow, the lower neuter purplish; bracts minute or 0; ^{br}bracteoles 0. **Sepals** 5, connate in a campanulate calyx; teeth ^{7Ort-}short. **Petals** 5, connate below, valvate. **Stamens** 10, free, ^{-Uortl}stipitate; anthers ovate, tipped by stalked glands; pollen-tubes many. **Ovary** subsessile, many-ovuled; style filiform; ^{stl}stigma terminal, truncate. **Fruit** a linear, twisted, coriaceous, dehiscent or irregularly disarticulating lomentum, continuous ⁻⁻⁻ⁿⁱⁿin ⁻⁻⁻. **Seeds** obovate, compressed.

6*- DICHROSTACHYS CINEBEA W. & A. ! F. B. I. ii. 288. *MtmOM*
cinerea F. I. ii. 561.

Orissa, Khurda.

A large shrub. *Vernac.* Vurtuli.

296. *Neptunia* Lour.

^{an}Annual herbs or undershrubs, branches often compressed or angled; *leaves* evenly 2-pinnate; leaflets small, sensitive; stipules insistent; stipels 0. **Flowers** small, in ovate-globose, ^{P^}uncolored, ^{sol}solitary axillary heads; upper flowers ⁱin ^{*}in ^{lower}lower ^{*}in ^{lowest}lowest neuter ^{*><>}Protruding, flattened staminodes; bracts minute; bracteoles 0. ^{8e}Petals 5, connate in a campanulate tube; teeth short. **Petal** ^{co}connate below or free, valvate. **Stamens** in ^{*}in ^tin ^{flow}flowers ^Bin ^{xu}in ^{rarely}5, free, exserted, tipped by a stipitate gland; present numerous granules. **Staminodes** in neuter flowers 10, petaloid ^{exserted}exserted, **Ovary** stipitate, many-ovuled; style filiform; stigma

small, terminal, concave. *Fruit* an obliquely oblong flattened, coriaceous pod. *Seeds* transverse, ovate, compressed. *Stems* prostrate or nearly so; leaflets of a pinna 8-15-jugate, oblong, 6-10-seeded. *Stems* ascending, stout; leaflets of a pinna 20-30-jugate; ligulate, 15-20-seeded.

700. NEPTUNIA OLERACEA Lour.; F. B. I. ii- 285;

Mimosa natans F. I. ii. 553.

C. Bengal, in jheels.

A widely creeping marsh plant. *Beng.* Pani-najak.

701. NEPTUNIA PLENA Benth.; F. B. I. ii. 286.

Mimosa Adenantha F. I. ii. 554.

C. Bengal, introduced only.

A stoutish marsh-plant; native of America.

Belati pani-najak.

297. Xylia Benth.

A tall, hard-wooded tree; *leaves* evenly 2-pinnate jugate; leaflets opposite, even-pinnate, large, few; linear, deciduous; stipels 0; interfoliolar glands few. *Flowers* globose, peduncled heads, peduncles fascicled in racemose at ends of branches; bracts 0; bracteoles connate in a short, tubular-campanulate calyx; *Petals* 5, slightly connate below, valvate. *Stamens* 10, shorter and longer, free, exerted; anthers gland-tipped sessile, many-ovuled; style filiform; stigma small, capitate. *Fruit* a sessile, broadly falcate, flat, very thickly woody pod, elastically but tardily; septate within. *Seeds* oblong, compressed.

702. XYLIA DOLABRIFORMIS Benth.; F. B. I. ii- 286; E-

Mimosa xylocarpa F. I. ii. 543.

Orissa, Khurda.

A tall tree. *Vriya* Boja, kongora.

298. Desmanthus Willd.

Perennial herbs or undershrubs; branches striate or *leaves* evenly 2-pinnate; pinnae even-pinnate; leaflets stipules setaceous; stipels 0. *Flowers* in ovate-globose heads; axillary peduncles; all for the lower neuter, some

apetal
Panul f
valvat
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concave
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Passed

bracts 0; bracteoles 0. *Sepals* 5, connate in a cam-
panulate calyx. *Petals* 5, free or slightly connate,
not gland-tipped; *Stamens* 10 or 5; filaments free, filiform; anthers ovate,
pollen-granules numerous. *Ovary* subsessile,
many-ovuled; style subulate or clavate; stigma small, terminal,
fracture linear > straight, coriaceous pod, continuous or
passing within. *Seeds* longitudinal or oblique, ovate, com-

703

- DESMANTHUS VIRGATUS Willd.; F. B. I. ii. 290.
C. Bengal, naturalised, but rare. ^
A perennial undershrub with twiggy branches.

299. Leucsenia Benth.

O. shrubs or small trees; leaves evenly 2-pinnate; pinnae even-
ly pinnate; leaflets small. *H* many, or fewer larger; stipules small or
on the peduncle. *Flowers* in globose heads, the lower or all
axillary peduncles, sometimes the upper
bracts usually 2, under the flower-head or
on the peduncle; bracteoles 0. *Sepals* 5, connate in a
free, valvate calyx; teeth short, ovate, often mucronate, not gland-tipped;
filiform; anthers numerous. *Ovary* stipitate, many-ovuled; style
coriaceous, stigma terminal >> small. *Fruit* a stipitate, flat, ligulate,
continuous within. *Seeds* transverse, ovate, com-

701

- LEUCANA GLAUCA Benth.; F. B. I. ii. 290; E. D. L. 306.
Chota Nagpur; C. Bengal: naturalised.
A large shrub or small tree; native of America.

300. Mimosa Linn.

Pinnately 3- or 4-lobed; herbs or shrubs; leaves evenly 2-pinnate;
pinnae pinnate; leaflets small, sensitive or subsensitive,
falling. *I* stipules small; stipules often 2 to each pinna,
small, in globose heads on axillary, solitary, or fascicled
peduncles, the upper peduncles sometimes in terminal racemes;
bracteoles 0. *Sepals* 4, connate in a campanulate calyx;
short, 4, connate below, valvate. *Stamens* 4 or 8,
5 filaments free, filiform; anthers ovate, not gland-
tipped; pollen-granules many. *Ovary* stipitate, many-ovuled;
filiform; stigma minute, terminal. *Fruit* a flat, membranous,

disarticulating lomentum; the 1-seeded joints ^{rating when} ^{sepa} ^{tinu} ripe from the persistent sutures; subseptate or con

Seeds ovate or orbicular, flattened.

Stamens as many as petals; rachis of leaf bristly; ^{st n i} ^{ic y y} prickly; pinnre digitately congested; sutures of pod very P^l... ^[CA. undershrubs..... X^{.....} stem V^{v l ol}

Stamens twice as many as petals; raohis of leaf smoo in, unft^r^fa but not bristly; leaves 2-pinnately compound; sutures o P ^ bric^r^us. or with only a few prickles; large shrubs or small trees..... E. D.

705. MIMOSA PUDICA Linn.; F. I. ii. 564; F. B. 1-^u-

M. 557.

In all the provinces, by roadsides.

An undershrub. *Hind.* Lajalu, lajwati; ^{& n J} ^{Lajak}

The Sensitive Plant; a very troublesome weed. ^{E. 1} ⁵⁶²

706. MIMOSA RUBRICAULIS Lanik; F. B. I. ii- 291;

M. *octandra* F. I. ii. 564.

Chota Nagpur; W. Bengal; C. Bengal.

A straggling, prickly shrub. *Hind.* Shiah-kan ^{ta Beng}

Shiah-kanta, kuchi-kanta; *Santal.* Sega januni.

301. Acacia Willd.

Trees, or erect or climbing shrubs; *leaves* evenly ^{ly 2-pi} ^{innate;} ^{iculous} pinnae even-pinnate; leaflets small; stipules small or ^{collis?} ^{es o*} sometimes spinescent; stipels 0. *Flowers* in cylindrical ^{S P L} ^{10 J} globose heads; peduncles axillary solitary or fascicled, *ax.* ^{ter} ^{base} paniced; bracts usually 2, at apex or in middle, less often a ^{n a} of peduncle; bracteoles 0. *Sepals* 5 or 4, rarely 3, connate ^{te at} campanulate, shortly toothed calyx. *Petals* 5 or 4, exserted, ^a ^{fol n} nate below. *Stamens* many, exserted, free or shortly connate ^{at} base; anthers small, not gland-tipped; pollen masses 2-4 in e cell. *Ovary* sessile or stipitate, 2-many-ovuled; style fh ^{fol n} stigma small, terminal. *Fruit* aligulate or oblong, flat and dry* rarely turgid and subcoriaceous pod, or an indehiscent lomentu ^O [>] continuous or occluded or septate within, but never disarticulating ^h sutures not thickened. *Seeds* transverse or longitudinal, usua [>] ovate or compressed; funicle filiform or subarillate.

•Trees or erect shrubs, the branches armed with diverging stipule ^{ol} infra-stipulary spines, but without prickles:—[p. 457]

flowers in elongated axillary spikes; spines short, slightly recurved V pods thin, *k* sutures not sinuate :—[p. 457]

Bark white; calyx downy, not much shorter than the pale petals;

Bark brown; calyx less than half as long as the daik-yeiow p

PinnB 20-40-jugate; leaflets 30-50-jugate :-

Calyx, petals, and rachis covered with spreading hairs

Calyx and petals glabrous; rachis puberulous

Flowers in globose heads; spines long and straight: LP

Heads axillary:—

flowers yellow :—

Pod with a pulpy mesocarp and 2-seriate seeds, thick; s, j^
cylindric, glabrous, with straight sutures;

leaflets 10-20-jugate, elongated :—

Pod coriaceous with 1-seriate seeds, compressea rather deeply

Pod thickened, valves depressed, and sutures pinnæ 3-6-

sinuate between the seeds, finely grey-downy, jugate; leaflets 10-20-jugate.

Pod thin, flat, sutures not sinuate between the eburnea.

glabrous; pinme 2-5-jugate; leaflets 6-12-jugate; leaflets 20-30-

Flowers purple; pod thin, flat, 6-12-jugate; leaflets 20-30-

seeds, thinly grey-downy; pinme jugate

Heads in simple terminal panicles; flowers 7&0TM jugate; leaflets

sutures not sinuate, closely tomentose; pinnte 15-30-jugate

shrubs without stipulary spines, but with many recurved

along the branches; flowers in globose, amp y 1- paniculate

Pod truncate, somewhat depressed -ween the seeds, sutures

slight, below. ripe shrivelled and rugose; innæ 6-8-jugate;

leaflets 5-7-jugate; flowers yellowish whituh —

Pod polle oi IcLis, flat, sutures not sinuate; < ^ > J ~ /jugate;

not close-set, oblong-ligulate, glabrous beneath, 8-12

pinWi-8-jugate; ovary and pod glabrous.

I-* u e ts close-set:—

ary and pod pubescent; pinnæ ipn.flets oblong-

ligulate, pubescent beneath, ^ " J ^ ^ " " " leafleti narrow-

Ova cy and pod glabrous; pmmffi 8-lb-jugate, lea

line kr, 40-50-jugate:-

Rachis rather closely pubescent with no £ armed beneath

Btchifi usually quite glabrous and almost always prickly, if without

with prickles; if slightly pubescent *TM pennata var. arrophula.

prickles then glabrous.

707. ACACIA STYMA Han, ; p. B. I. ii. 294 ; E. D. A. 291. *Mimosa buma* F. I. ii. 563₃₁
 Chota Nagpur; W. Bengal.
- 708 * TM^{ed}*mn¹¹ «a tree, **B**g..San-kanta**,
 708. ACACIA CATECHU Willd.; F. B. I. ii. 295 ; E. D. A. 135.
Mimosa Catechu F. I. ii. 563.
 Behar¹J Chota Nagpur ; Orissa ; E. Bengal, Madhupur jungles.
 A medium-sized tree. *Hind.* Khair, khair-babul ; *Beng.* and *Santal*. Khayar
- 709 ACACIA CATECHUO partly. *Mimosa a catechuoide** F. I. ii. 562.
 C. N. and E. Bengal.
 A medium-sized tree.
710. ACACIA FARNESIANA Willd. ; F. B. I. ii. 292 ; B. D. A.* 217.
Mimosa Farnesiana F. X. ii 557.
 Ranted rather commonly', especially in the western p*es.]
 A shrub or small tree. *p<t>*Mfl. Belati babul, guhiya babul ; *Sant^ai>* Gabtir,
711. ACACIA ARABICA Willd. ; F. B. I. ii. 293 ; E. D. A. 101.
Mimosa arabica F. I. ii. 567.
 Tirhut ; Behar ; C. Bengal.
 A tree. *Vernac.* Babul, kikar.
712. ACACIA TOMENTOSA Willd. ; F. B. I. ii. 294 ; E. D. A. 299.
 Western Behar.
 A tree.
713. ACACIA TOMENTOSA Willd. ; F. B. I. ii. 294 ; E. D. A. 299.
Mimosa tomentosa F. I. ii. 558.
 Central Bengal ; Sundribuns.
 A small tree.
714. ACACIA LEUCOPHLEA Willd. ; p. B. I. ii. 294 ; E. D. A. 249.
Mimosa leucophlecea P. I. ii. 558.
 Orissa, Khurda.
 A shrub. *Beng.* Safed-babul ; *Uriya* Goira.
715. ACACIA CONCINNA DC. ; F. B. I. ii. 296 ; E. D. A. 200.
Mimosa concinna & I. ii. 565.
 N. Bengal¹ Chittagong,
 A large climber. *Hind.* Ritha ; *Bang.* Ban-ritha.

[Albizia.]

LEGUMINOSÆ.

D. A. 233.

- 716. ACACIA INTSIA Willd.; F. B. I. * 297 ;
Mimosa Intsia F. I. ii. 565.

Sundribuns; Chittagong.

An extensive climber.

g, I. ii. 297 ;

- 717. ACACIA CHA W. & A. A. Intsia var. C
E. D. A. 233. JfMiwa Cwa F. I. n- & Ma dhupur
W. Bengal; Chota Nagpur; Orissa; B. «en
jungles.

A large climber. Santal. Kondro-jamu r. £0z, Kandarū.

- 718. ACACIA PENNATA Willd.; F. B. I. n-
F. I. ii. 565. M. torta F. I. ii-^{566<}

W. Bengal; Chota Nagpur. Kundaru ; San-

A large climber. Hnd. Biswal; &ona-
tal. Undaru.

- 71^/2. Var. ARROPHULA Bak.; F. B. I. *.^{298>}

Chittagong.

A large climber.

302. Albimida Duva,

Considerable trees, rarely climbing shrubs, ^{leaves} ^{evenly}
 Pinnate; pinnæ even-pinnate; leaflets large, ^{medium}
 netous, or small very many; stipules small ^{or} ^{obs} ^{or} ^h
 7 f, subfoliaceous; stipules 0. Flowers in ^{panicle} ^{at ends}
 Panicles; Peduncles distinct, axillary ^{in a}
 Ranges; bracts 2 or 0; bracteoles 0. ⁵ ^{ort.} ^{Peef} ^{is} ⁵
 Panulate or tubular calyx; teeth or lobes [»] ^{alvate} ^{sfcMWN}
 connate below in a funnel-shaped corolla; lobes ^v ^{serte} ^{MjUwr8}
 connate below in a tube, somewhat exserted [»] ^{or} ^{gtipi}
 P-U-granules 2-4 in each cell. [^] [^] ^t ^e ^{***}
 many-ovuled; style filiform; stigma small ⁱ ^{continuo} ^{US}
 ligulate, compressed, thin pod or lomentous, ^{^^} [^]
 Joints sutures not thickened, and valves ^{ftliform}
 Small ovate or orbicular, compressed; funicle

In (shrub) the pulvinus below the leaf-base "£? * £l" n ^
 curved hook; leaflets numerous, narrow-linear, ^{myHoJhyiu}
 -nerved, close-set "....."

usually tall trees; pulvinus not persistent:— with ^{mbin-nerve}
 Pules very large; leaflets numerous, narrow, ^{stipulaUi}
 upper margin, hardly close-set [p. 4bOJ

*Stipules small:—[p. 459]

Leaflets numerous, narrow, close-set:-

Leaflets narrowly ovate with median main-nerve; *flinⁱⁿ, icU-
pubescent with spreading hairs; flower-heads solitary or I**
late in axils of leaves. Richardⁱⁿ ^

Leaflets linear with main-nerve nearest upper margin? *illary
rachis puberulous with very short hairs; flower-heads in
corymbs. Richardⁱⁿ ^

Leaflets ovate, not close^et :-

Leaflets obtuse, never more than 2 in. long:- ^ in;

Leaflets 8-24-jugate, main-nerve nearer the upper ^
mam-rachis with one basal and 1-2 distal glands W> ^

bases of the upper pairs of pinn* 0 ^, !> ^

Leaflets usually fewer; leaves with 1 basal gland on ^
ra ^ i S, b U t n o n e b e t w e e n b f t s e s o f t h e d i s t a l p a i r s o f P. i n n . b e a d s

Mam-nerve rather nearer lower than upper margin .. ^
copiously paniced, florets sessile; leaflets 6-12-JUK ^

pinnae 2-6-ju^ate; pods brownish f p l l e d ;

Main-nerve median; heads not paniced, florets V*IG> ^
leaflets 5-9-ju^ate; pinnae 2-3- (less often 4, ***%*
jugate; pods pale.../..... U ^ % .)

Leaflets acuminate, the terminal pairs 4 in. long, 1-2 ^
jugate; main-nerve median; pinnae 1-2-jugate..... lucida.

719. ALBIZZIA MYRIOPHYLLA Benth.; F. B. I. ii. W^o *Mimosa*
mijriophylla F. I. ii. 549.

Chittagong.

720. ^ Climbin^g sh ^ b. Vernac. Tituliya. 4 722

720. ALB^{1221A} STIPOLATA Boiy . F B L . . . 3W) . E . P . A .
* " " * . r i i j w f a t e F. 1. ii. 549. M. Sm itW
* . I. ii. 550.

Chota Nagp^{ur} N. Bengal, chittagong.

721. Ar[;] ; t r a U t r e e = Hind. Siran; Gen[^]. Amlukia. A. 686.

721. Mimos⁷ U B W T M AMARA B . v . p . B . ^ . A . l l g o o . , E p >
F. I. ii. 54*. M. palchelU F. I. << 548.
w s s a ; sometimes planted elsewhere,
A small tree.

722. ALBIZZIA RICHARDIANA King & Prain.
Planted in C. Bengal.
A tall, handsome tree; native of Madagascar. Beng.
Belati amluk.

723. ALBIZZIA ODOEATISSIMA Benth.; F. B. I. ii. 299; E. D.

A. 711. Mimosa odoratissima F. I. ii. 546. In all the provinces. A tall tree. Santal Jang siris.

724. ALRIZZIA PROCERA Benth.; F. B. I. ii. 299; E. D. A.

Mimosa procera F. I. ii. 548.

In all the provinces.

A tall, handsome tree. Beng. Koroi; Btnd. Safed su

725. ALBIZZIA LEBBEK Benth.; F. B. I. ii. 298; B. D. A. 690.

Mimosa Sirissa F. I. ii. 544.

Generally planted.

A medium tree. Vernac. Siris, «irjssan»

726. ALBIZZIA LUCIDA Benth.; P. B. I. ii. 299; E. D. A. 690.

Mimosa lucida F. I. ii. 544.

C.Bengal; E.Bengal; Chittagong.

A medium tree. Beng. Sil-koroi.

303. Calliandra Benth.

Stipules 2-pinnate; pinnæ even-pinnate; U (in our species) large; stipules terminal. W in globose heads; peduncles axillary or mes, solitary or subfascicled; bracts 0; I in a campanula calyx; limb toothed. tepidly cleft corolla; lobes valvate. S below; filaments filiform, much exserted; anthers 8-f; pollen-granules in each cell 8-f; style filiform; stigma terminal, bifid; ovary 2-lobed, somewhat curved, flat, rigidly 3-lobed; valves thin; sutures much thickened; valves the tip backwards. Seed* obovate or orbicular, compite.

727. 64m«iMU UMBROSA Benth.; F. B. I. ii. 299; E. D. A.

Chittagong.

A, small tree.

304. Pithecolobium Mart.

Trees; leaves, evenly 2-pinnate; pinnæ 2-pinnate; stipules small or conspicuous, sometimes globose heads, on solitary, axillary at the ends of branches; bracts small.

Pithecolobium.

or 0; bracteoles 0. *Sepals* 5, rarely 6, connate in a ^{can} ^{anulate} ^{inate} ⁱ ^{6 c} or tubular calyx ; teeth very short. *Petals* 5, rarely ^u ^{niei} ^{"O} ^{uS,} a tubular corolla with long, valvate lobes. *Stamens* ⁿ ^{all;} ^{poi} ^{e 0.} far exserted, connate below in a tube ; anthers ^{small;} ^{oYU} ^{led;} granules in each cell 2-4. *Ovary* sessile or stipitate, ⁿⁱ ^{any} ^{ivCj} ⁿ ^{atc,} style filiform ; stigma minute, capitate. *Fruit* a ligulate, ^{Qn} ^{ftD} less often only falcate, usually much twisted pod, or le. ^{ss} ^{soI} ^{ne'} indehiscent lomentum, with unthickened sutures. [»] ^{creds} ^{ressed-} times arillate or embedded in pulp, ovate or orbicular, ^c ^{omp}

Stipules spinescent; pinnae and obtuse leaflets each 1-jugate ; seeds half-covered by a white, pulpy, edible aril ^{seeds half-} ^{ulce.} ^{ate} ^{leaflets} ^{angulatum.}
 Stipules not spinescent; pinnae 2-3-jugate, and large, and 3-6-jugate ; seeds not arillate.....

728. PITHECOLOBIUM DULCE Benth.; F. B. I. ^u ^o ^{...} ^{D.}
 P. 900. *Mimosa dulcis* F. I. ii. 556.

Planted everywhere, but often also self-sown. ^{Ej} ^{at} ^{We}
 A medium tree ; often also trimmed as a hedge. ^{dek} ^{^!}
 of Tropical America. Vernac. Belati anah' *
 babul.

729. PITHECOLOBIUM ANGULATUM Benth.; F. [!] ^{*} ^{I.} ^{fl} ³⁰⁶⁻
Mimosa heterojriylla F. I. ii. 545.

Chittagong; Tippera.
 A tall tree.

305. Enterolobium Mart.

Erect trees; leaves evenly 2-pinnate; pinnae even ⁿ ^v ^{innate;} leaflets opposite; stipules small, lanceolate; stipels ^U. ^{Flo} [^] ^{gfs} in globose heads, on solitary or subfasciculate peduncles, ^{axi} ^{njary} or the upper racemose ; bracts lanceolate ; bracteoles 0. ^{Senals} [^] connate in a campanulate calyx ; teeth triangular. ^{Petal} ^{*} ⁵ ^{-r} ^{^^} nate in a funnel-shaped corolla; teeth short, valvate. ^{Stamens} ¹⁻ ^{anthers} numerous; filaments much exserted, connate below; small; pollen in 2-4 granules in each cell. *Ovary* sessile, ^{many-} ^{gulate,} ovuled; style filiform ; stigma small, terminal. *Fruit* a ^k [^] ^e compressed, indehiscent lomentum, septate within between ⁿ ^{plpy;} seeds ; epicarp crustaceous; mesocarp hard or spongy or ^{plpy;} endocarp cartilaginous, continuous with the septa. *Seeds* [&] ^a [^] verae, compressed; funicle slender.

730. ENTBEOLOBIDM SAMAN Prain; E. P. A. 720; P- 909.

Planted; especially in Central and Eastern P^{art*}; Native of
A medium-sized spreading tree; pods pulpy.
Tropical America.

Order XLYII. ROSACE*.

Herbs, «h_{ru}b_s, sometimes sarmentose or climbing, ox: trees.
f*w« alternate, rarely opposite, simple or compound; «*^s*^s,
***. or adnate to pet_{ke}, very rarely obsolete. Ftover. usuaHj
r<*>W and hermapLdité. Dish lining the calyx-tube or foimrng
a ring at its base. Sepals connate in a tube, adnate to the ovary
or ^ e; limb usuaUy 5-lobed, the fifth lobe uppermost, lobes
^ally persistent) oft en braoteolate, imbricate or j W j ^ J
5, " «% 0, inserted below the margin of the disk, dec. -
Orally imbricate. Stamen, numerous, pengynous, rarelyI^o r 5
*¹⁰. h one or many series, sometimes connate and deoh^to,
fal««n_ent_s subulate o/fiUforna, usually incurved in bud, anthers
Sln»H. didymous ; dehiscence longitudinal, int^se. Cnpebl or
^ bee or connate; styles basal, lateral, or -f^lQa^ or
co"nate; stigmas simple or capitate or penicUlate; ovules i or
^ in each carpel, anatropous, pendulous with a vent.al' o.
-.Ending ^ a P dorsal raphe. Fruit usually * C e ^
C l ^erd aahenes or drupes, or a berry, or single drupe, rarefy
capsular dehiscnt. Seel erect or pendulous; ^ t a nienibrinous
or coriaceous ; albumen 0; embryo with large, flat, fleshy cotj
ledons.

- Ov*7 superior ; the ripe carpels not enclosed in the calyx-tube. Pygeum.
- ^ftrpel solitary ; unarmed shrubs or trees.....
- Clu"Pels many:— iw_
- Unarmed herbs; ripe carpels dry ; ovules solitary, ^ " Fr ^ . i ^
- Mienes set on a fleshy receptacle.....Potentilla.
- Achenes set on a dry receptacle.....• • •••"• R_{ubus}.
- AnnadBhrabB; ripe carpels fleshy ; ovules 2, pendulous.... K
- Ovar^y inferior; the ripe carpels enclosed in the calyx-tube^ stipules ;
- Armed shrubs, with compound leaves and large adnate.....Rosa.
- carpels many, not confluent when ^e—'^:\^"carpels few,
- Unarmed trees, with simple leaves and small stipules,
- co&fluent when ripe:— Eriobotrya.
- Ovary 5-celled ; flowers paniced....." pourthisea.
- Ovary 2-3-celled ; flowers corymbose

[Pygeum.

306. Pygeum Gaertn.

Evergreen shrubs or trees; leaves alternate, persistent; entire; stipules small, fugacious; basal glands 2 or 3, small, racemose, sometimes 6 from suppression of ovary; connate in a campanulate or urceolate tube, with 10-15-lobed; lobes often unequal. Petals 5-10, minute 5-6-lobed, absent when calyx 10-15-lobed; even often much resembling calyx-lobes, usually villous. 50, 1- or more-seriate at mouth of calyx-tube; filaments incurved; anthers small. Carpel solitary at the calyx-tube, ovoid or subglobose; style terminal, slender, stigma terminal, capitate; ovules 2, collateral, pendulous; a transversely oblong, obscurely didymous, rarely drupe; pericarp thin, soft or dry. Seeds transverse-cotyledons thick, hemispheric; radicle minute, superior. Tree; leaves oblong-lanceolate, long-acuminate; racemes slender, petals villous, narrow-ovate; stamens 30-40. Shrub; leaves oblong, subacute or obtuse; racemes dense, petals glabrous except margins, wide-ovate; stamens 15.

731. PYGEUM ACUMINATUM Colebr.; F. B. I. ii- 318-

N.Bengal; Chittagong.

A tree; drupe dark-purple, an inch across.

732. PYGEUM LUCIDUM And. P. Andersoni F. B. I. 320.

Chota Nagpur, Parasnath.

A shrub.

307. Fragaria Linn.

Perennial, scapigerous herbs with creeping stolons; leaves 3-foliolate, rarely 5-foliolate, more rarely pinnate or stipules adnate. Flowers white or yellow, often polygamous cymose on erect scapes; bracteoles 5, close under calyx. Petals 5. Stamens many, 1-seriate, numerous on a convex receptacle; style ventral, persistent; solitary, ascending. Fruit a large, fleshy receptacle, with many minute achenes sunk in its surface. Seeds iiiiii.

Flowers yellow; fruit insipid.

Flowers white; fruit edible.

ind. ca. a, veSo,

⁷³³ - FRAGARIA INDICA Andr.; F. I. ii. 520 ; F. B. I. ü. 343; E. D. P. 678.

Tippera.

A herb with long, slender, prostrate stems.

¹⁶¹ - FRAGARIA VESCA Linn.; F. B. I. ii. 344; B. D. F. 682.

Cultivated in the cold season in the western provinces.

A herb with slender, prostrate stems. Strawberry.

308. *Potentilla* Linn.

Perennial herbs, rarely shrubs; *leaves* digitately or pinnately compound; stipules adnate. *Flowers* white or yellow, rarely red, solitary or in corymbose cymes; bracteoles 5, rarely 4 under the calyx. *Sepals* 5, rarely 4, persistent, connate in a hemispheric or urceolate tube; lobes valvate. *Petals* 5 or 4. *Disk* annular or lining the calyx-tube. *Stamens* many, 1- or more-seriate, rarely definite. *Carpels* many; style persistent or deciduous, ventral or terminal; ovule solitary, pendulous. *Fruit* of many achenes, clustered red on a small, dry receptacle. *Seeds* minute.

⁷³⁵ POTENTILLA SUPINA Linn.; F. B. I. ii. 359; E. D. P. 1210.

Voviarum flavum F. I. ii. 521.

Tirhut; N. Bengal.

An annual herb with numerous, slender, spreading stems.

309. *Rubus* Linn.

Sarmentose or erect shrubs, rarely creeping herbs, almost always prickly; *leaves* alternate, simple or compound; stipules \gg or free. *Flowers* in terminal and axillary corymbose cymes, solitary, white or red; bracteoles 0 under the calyx. \gg 5, connate in a wide, short-tubed, disk-lined calyx; lobes \ll . *Stamens* many. *Carpels* many or few, on \gg or conical receptacle; style subtenuinal; ovules \ll , \ll pendulous. *Fruit* usually a cluster of numerous, small, \ll drupes, crowded on a dry or spongy conical receptacle; rarely drupes few, very rarely solitary. *Seed* pen-

⁷³⁶ - BOBUS HEXAANGULUS Roxb.; F. I. ii. 016; F. B. I. ii. 327.

Chittagong.

• VIPU

A climbing shrub, stems as thick as human arm, \ll rather flat; flowers in large panicles. *Vernac.* \ll

cnura.

310. Rosa Linn.

. Shrubs, erect, sarmentose, or climbing, usually Prickly; 3 e; pinnately 3- or more-foliolate; leaflets more or less * * « * * e, stipules adnate. Flowers terminal, solitary or corymbose, ^ ft yellow, or red; bracts rarely persistent. Sepals 5, connate i. d persistent, globose, ovoid, or flask-shaped tube with < * > ^ T f L U mouth; lobes leafy, persistent or deciduous, imbricate. * > - t normally 5, in cultivation often many. Disk lining a » d ^ " 1 occluding the calyx-tube, silky. S t o L s many, inserted on n * ; disk. CarpeZ, many, rarely few, in the bottom of the c d j * * ; styles subterminal, free or connate upwards; stigma thicker * > ; ovule solitary, pendulous. Fruit a fleshy calyx-tube (rose-h ^ - enclosing a cluster of coriaceous or bony achenes. Seeds s m ^

Fruit and branchlets densely tomentose ; flowers subsessile, white, « J stiongly pear-scented, surrounH B l ^ I - T M , prickles twin involucre: Fruit a d bra hes without tomentum ; flowers stalked, often double, not bmoiate: I

Prickles mixed with often glandular bristles; flowers delicately scented, rose or purple • _

Prickles unequal, the larger ones hooked :-

Brs es few; sepa l s re n e x e d i n flower sc ^ Bristles many; l e a v e s a n d c a l y x g a n d u l a r c i l i a t e ; Z ° * 9 * r . n o d d i n g cenH) o i v

Prickles equal; sepa l s re f l e x e d i n flower :- Prckles not mixed with bristles; flowers purple, rose, or * « " » - strongly scented : _

Prickles equal; sepa l s re f l e x e d i n flower :-

Calyx-tube obovate. indica.

Calyx-tube globular indica (semperflorens).

Prickles somewhat unequal alba.

737. ROSA INVOLUCRATA Roxb.; F. I. ii. 513; F. B. I. ii. 365; E. D. R. 582.

Chota Nagpur ; N. and E. r .

durin " a , g r o w s n a t u r a l l y i n P l a c e s u s u a l l y s u b m e r g e " e m n y s e a s o n -

738. RO^A n L - e m n y s e a s o n - Wild Rose of Bengal.

r n ^ r r I ^ T Mill = * • B - I . ii . 364 ; E . D . R . 508 .

A s 2 e n 8 > ^ r 6 q u e n t : w M y a t a d ^ A t t a r . A s m a l l , e r e c t s h r u b . F e r n « c . G u l a b .

- ⁷³9. ROSA CENTIFOLIA Linn.; F. B. I. ii. 513; F. B. I. ii. 364 ;
E. D. R. 504.

In gardens.

A small, erect shrub. Cabbage Rose. Vernac. Guláb.

- ⁷⁴0. ROSA GALICA Linn.; F. B. I. ii. 364; E. D. B. 526.

In gardens, occasionally.

A small, erect shrub.

- ⁷⁴L ROSA INDICA Linn.; F. B. I. ii. 364; E. D. B. ³¹oi

~~R~~ chinensis F. I. ii. 513.

In gardens, frequent.

A small, spreading shrub. Beng. Kanta-guláb.

- ⁷⁴¹/2. Var. SEMPERFLORENS. *B. sempreflorens* F. I. ii. 514.

In gardens.

A small, spreading shrub.

- ⁷*2. ROSA ALBA Linn.; F. B. I. ii. 364 ; E. D. B. 501. *B. glan-*

dulifera F. I. ii. 514.

In gardens.

A subscentent shrub. Beng. Shwet guláb.

311. Eriobotrya Lindl.

La*ge or small trees; leaves entire or serrate, simple, thickly
C0*aceous; stipules narrow-lanceolate, or broad. Flowers white,
in o/soid panicles. Sepals 5, connate in a turbinate, obconic, or
C Wte tube; lobes small, ovate, obtuse, persistent, spreading
of erect. petals 5, contorted or imbricate in bud, orbicular or
<*ovate, often notched and oblique, margins sinuate; claw f*^hTMTM
Or Pilous. Stamens about 20, inserted on the calyx-limb; filaments
late. Carpels connate in a 2-5-celled inferior ovary; styles
r⁵> connate and woolly below; ovules 2 in each cell, basal, ascend-
II* Fruit a succulent or dry berry, 2-5-, rarely 1-locular; endo-
Cl*P membranous; chambers 1-, less often 2-seeded. Seeds erect,
Cotyleabns thick.

^ 1 Scontorted in bud. les 2; leaves glabrous, long-^ed^peUcto
f ^ous; Mt .76 in. ^/ellipsoid; seeds 1-2—'' '' '' ^ ^
^ not contorted; styL 5; leaves softly tomentose beneath tot
Petlo led, petioles woolly; fruit 1-5 in. long, ovoid; seeds 3-4, nuply 5^

- ⁷⁴3. ERIBOTRYA BENGALENSIS Hook. f; F. B. I. n. 37¹, E. D.

B. 281. *Mespilns bcngalensis* F. I. ii. 510.

Chittagong.

A large, stout tree.

744. ERIOBOTRYA JAPONICA Lindl.; F. B. I. ii- 372 ;

Mespilua japonica F. I. ii. 510.

Cultivated.

A small tree. The Loquat.

312. Pourthisea Dene.

Shrubs or small trees, generally woolly when young; leaves simple, persistent, crenate; stipules minute, subulate. Flowers small, white, in few-flowered corymbs with ultimately warty lobes acute. Sepals 5, connate in an obconic tube; lobes acute. Petals 5, contorted, obovate, oblique and notched; lobes acute. Stamens 20; filaments slender. Carpels 2-3, connate in a 3-lobed ovary; styles 2-3, connate more than half their length. Fruit 2-fid, capitate; ovules 2 in each loculus, collateral, bifid. Flesh fleshy. Seeds 1 or 2; endocarp membranous. Seeds ellipsoid, rather thick.

745. POURTHISEA ARGUTA Dene, var. HOOKERI Hook.

ii. 382.

N. Bengal, Western Duars.

A shrub.

Order XLYIII. SAXIFRAGACEAE

Trees, shrubs, or herbs. Leaves alternate with stipules adnate to petiole or 0, or opposite with stipules 0. Flowers hermaphrodite or polygamo-dioecious, regular. Disk swollen or cup-like, sometimes reduced to intra-staminal glands. Sepals united in a calyx with the tube usually more or less adnate to ovary, but sometimes almost or quite free; lobes imbricate or valvate. Petals 4 or 5, rarely 0, perigynous or epigynous, subhypogynous, imbricate or valvate. Stamens inserted and usually as many or twice as many as petals, occasionally numerous; filaments free, sometimes dilated and 2-lobed; anthers small, didymous; dehiscence longitudinal, lateral or to the base, rarely extrorse. Carpels usually 2, less often 3-5, united usually 2-locular, less often 3-5-locular ovary with axial placentas, sometimes in a 1-locular ovary with parietal placentas; styles many as carpels, free or connate towards the top, stigmas capitate or lateral subcapitate; ovules numerous, anatropous, erect

Fruit dehiscent, capsular, rarely follicular, or an fleshy, rarely scanty or 0; embryo usually minute, subcylindric.

313. Yahlia Thunb.

; e annul or biennial, pubescent, often glandular, erect herbs; opposite, entire; stipules 0. Flowers axillary, subsessile or pedicelled, often geminate, white. Sepals 5, connate in a heiniceoW tube adnate to the ovary. I lobes persistent, ovate or lanceolate. Petals 5, epigynous, obovate, shorter than filaments. Stamens 5, inserted on the margin of the epigynous subulate. Carpels 2, connate in an inferior pendulous, many-ovuled placentas; styles 2, Fruit a capsule, dehiscent at the apex in the styles. Seeds many, minute, ellipsoid, smooth.

Pi eiS Subsessile » 2- or often 1-flowered in most of the upper axils; with a small hairy scale at their base viseosa, Peduncled, 2-, rarely 1-flowered in most of the upper axils; ents naked at the base..... oldenlandioides.

746 - VAHLIA VISCOSA Eoxb.; F. I. ii. 89; F. B. I. ii. 399.

W. Bengal.

A small herb.

747 - VAHLIA OLDENLANDIOIDES Roxb.; F. I. ii. 69; F. B. I. ii. 399.

Behar.

A small herb.

Order XLIX. CRASSULACEAE.

Herb, with often a woody rhizome, or undershrubs; stems and usually succulent. Leaves alternate or opposite, usually Pk; stipules 0. Flowers regular, hermaphrodite or 1-seual, usually in cymes, sometimes subspicate or paniculate. I*** presented by hypogynous scales opposite, sometimes adnate to carpel. Sepals connate in a 4-5-, more rarely 6-8-fid, tree Caly*- Petals 4-5, rarely 6-8, free or connate. Stamens as many as many hypogynous or epipetalous; filaments form or subulate; anthers linear or didymous; dehiscence longitudinal, lateral. Carpels 4-5, very rarely fewer, free or con-

nate b low,
 %les f stiffZ ^ f UpWards in*o the subulate or filiform free
 numerous, 2-man! ^ oblique, ^capitate, or minute; ovules
 ^rely solitary, *£!/?**** on the Ventral suture/rarely few, very
 fewer, follicles de^L, Jr fendulous - Fruit of usually 4-5, rarely
 often few) rarely r? Jthe Ventral suture - *«**• man? leSS
 cylindric. solitary; albumen fleshy; embryo niinu^{te}

Calyx with a lone in«+ i
 campanulatewith, s_hor_n *** and a Portly 4-fid limb; corolla-tube
 readily bulbiferous' s_hor_n J 4fid llTM*>', retiring angles of crenate leaves
 Cftl yx with a short'inh. ^ Bryophyll'^
 ^ke with a spreadin' 4*TM* ^ P ^ 4-partite limb; corolla-tube ^sk-
 v' »«mg 4-fid jimb..... Kalanchoe.

Tall, erect, ^ BryOphyllum Salisb_
 Flowers iTrge, ^T*^', flesV herbs; leaves opposite, crenate.
 branches. Sepals 4 ^Plngt in sPreading panicles with oppos^
 c% x; lobes ^ , ~ n o a t e i n a * inflated, cylindric, or 4-ang^
 ^be, with shortlyTr ^ P e ^ 4, connate in a campanula
 inserted in the middl' * Patent limb* Stamens 8, 2-seriate,
 anthers o b W ,,!, «,, e t f e coroll a-tube; filaments filiform !
 C ^ f c 4 . ^ ^ S e « ? o d ; hypogynous scales 4, obtuse-
 st^es; stigmas ca pitellate; oVules many- ^ ^ * of 4 inanJ,,,
 «eeded follicles.

8. BRYOPHYLLUM CALYGINUM Salisb.; F. B. I. ii. 413; E. D.
 74 B. 909. Cotyledon rhizophylla F. I. ii. 456.
 C. Bengal; Chittagong.
 A glabrous, fleshy herb; steins ^ f^t high. Beng.
 Kóp-pátá.

3 --

leaves opposite, or the *Ollt> flesh->r stems and leaVeS,,
 many-flowered, suboani^f!^ alterna te. i-'fo/wrs large, erect, *
 tubular calyx; lobes n Uave Cymes. ««P«fa 4, connate to •
 Petals 4, connate in an a, ow-dually muoh i0 nger than the tube-
 •wtent, much lo nger than urceolate tube> with spreading lobes, P^r-
 eorolla-tube, tho se of one cal ^ Stamens «« 2-seriate, adnate to
 hypogynous scaleg 4, li e je«e s Souletimes infertile or obsolet«;
 of ooro «««-tube, narrow^d Lr oblong, oo rp* 4, adnate to **
 exsert ed «tyle8; stigmas obliqueV

truncate, $F^{ru\wedge o*}$ 4 many-seeded follicles, tffcds oblong, ellipsoid, longitudinally ribbed.
 Leaves $ob_{ovate-elliptic}$, crenate; sepals oblong, acute, standing apart at base.....*heterophylla*.
 Leaves $inj_{nfttr\wedge}$ lacinate, lobes entire, subserrate or dentate; sepals lanceolate, sub Patent.....*laciniata*.

749. **KALANCHOE HETEROPHYLLA** Prain. *K.floribunda* var. *glabra*
 F. B. I. ii. 415. *Cotyledon heterophylla* F. I. ii. 456.
 Chota Nagpur, Parasnath.

750 $K^{\wedge St\circ Ut}$, fleshy herb
 • $\wedge ALANCHOE LACINIATA$ DC.; F. B. I. ii. 415; E. D. K. 14.
Cotyledon laciniata F. I. ii. 456.
 Behar; E. Bengal. » •
 A^{st} out, fleshy herb. Vernac. Hemsagar.

Order L. DROSERACEJE.

$erbs, r_{rel}$ $\wedge som$ what woody below, perennial, usually small, generally hairy and insectivorous. Leaves often rosulate, rarely 2fid Ol_n pinnatifid; stipules 2. Flowers hermaphrodite, regular* $DisJc$ 0- *Sepals* connate in a 4-5-, rarely 8-partite cal_{yX} or $\wedge ree$ imbricate, persistent. *Petals* 5, hypogynous, usually membranous, marcescent, free or connate below, imbricate. *Stamens* 4-20, hypogynous or perianthous; filaments free or occasionally connate $K^{\wedge rare\wedge y}$ e_{pip}^{eta} lous; anthers basifixed or versatile; *dehiscent* CG completely or partially longitudinal, extrorse. *Ovary* free or r_{onl} $\wedge a(\wedge n$ attached to calyx at the base, globose or ovoid, 1-8-locular, $Styles$ 3-5, a_{*i} i gnas capitate, 2-fid, or fimbriate; *ovules* $Unier$ US rarely few attached to parietal, axial, or basal placentas, rarely ann $\wedge 6n$ $dulo$ US anatropous. *Frwit* a membranous or submembranous, usually loculicidal, 3-5-valved capsule. *Seeds* numerous, rarely US solitary, in each loculus; albumen fleshy; embryo axial, $cylil$ $\wedge ric$, or basal, minute.
 Leaves $gladular$ $\wedge hai$ y those of stem, if present, alternate ...**Drosera**.
 Leaves ves $vesicu$ Uir , glabrous, those of stem opposite.....**Aldrovanda**.

316. -Drosera Linn.

Perennial, glandular, pilose herbs, the glandular hairs partly derived from tissues beneath the epidermis; leaves rosulate, basal,

Order LI. HALORAGEJE.

Herbs or Un^ersm^ubs, rarely annual, often aquatic. Leaves opposite or whOr*ec* sometimes partly alternate, the submerged leaves 1-6n pectinate 5 stipules 0. Flowers hermaphrodite or Or fasci'1 Scl^all, sometimes incomplete, usually axillary, solitary gated. c.ea,7 Usualy sessile; whorls sometimes spicately aggregated. ovary, T I^? 0. Sepals connate in a calyx, with tube adnate to 0) concave^ n^* deci^uous, valvate or slightly imbricate, epigynous. ^tanien^ n^* deci^uous, valvate or slightly imbricate, epigynous. 2-locula; I or p, on m, s, m the hermaphrodite flowers; anthers 2*i or l- [Cehisceno e longitudinal, lateral. Ovary inferior, 4-, or or sinipi oCl^lar, comP^ressed or angled; styles 4, 2, or 1, fimbriate ^uit - e; n^ov ules ^» % or li pendulous from apex of loculus. SeParati^ au, . ^ or dru;)aceous » 4"t 2"» or 1-celled, indehiscent or testa m ng mto in dehiscent 1-seeded cocci. Seeds pendulous; em^banous J albumen fleshy; embryo axial, cylindrical.

318. Myriophyllum Linn.

Glab rarely alt^ aquatic herbs with floating stems; leaves whorled, pinnatifid, rarely en^re^ dentate, serrate, or the submerged ones pectinate, axillary in moncejou upper leaves or in nearly naked terminal spikes; limb 4. S or herma phrodite. <r Sepals connate in a short tube; Cav, Se^s^e. r^rel^ 2-lobed, sometimes obsolete. Petals 2 or 4, connate in 4-furrowed tube; limb 0 or of 4 minute lobes, rarely 2. Carpels 4, rarely 2, connate in an inferior 4- and plu oe^ led ovary; styles 4, rarely 2, short, usually recurved a 4-fur. m o Se; ovu*es solitary, pendulous in each chamber. Fruit cocci. J 6(inut or druP^e» sometimes separating into 4, rarely 2 ei*ibry 0 J 6C^S Pen^ulous, cylindrical-oblong; testa membranous; cylindrical, central in the copious albumen.

Flowers Carpel b^cl^ stigmas pink» much fimbriate; fruits acutely ridged along s, both ridges and furrows beset by pointed tubercles

tuberculatum.

Flowers white; stigmas green, little fimbriate; fruits with rounded ridges along carpel backs, puberulous or glabrous, tubercled or not

indie um.

BENGAL PLANTS.

nmriopW*tm
P ^ TM B. I.

754. MYRIOPHYLLUM TUBERCULATUM Roxb.; F. I. i. 451; F. I. ii. 432.

C and E. Bengal, in jheels.

A submerged water plant.

755. MYRIOPHYLLUM INDICUM Willd.; F. B. I. ii. 433. *M-drum* F. I. i. 451.

In all the provinces, in jheels and ponds.

A submerged water plant.

Order LII. RHIZOPHORE-ffi.

Trees or shrubs. *Leaves* coriaceous, entire rarely ^{late,} opposite, with stipules interpetiolar, caducous; rarely ^{llary,} alt* with stipules 0. *Flowers* regular, usually hermaphrodite, a* ^{brac-} surrounded at the base by connate or cupular bracts, rarely ^{e ^} teate. *Sepals* connate in a calyx, almost always more ^{o- ^} adnate to the ovary; lobes 4-14, valvate, persistent. *P*^fon-* many as the calyx-lobes, entire, emarginate, 2-fid or ^{^ * ' ^} volute or inflexed, always shorter than calyx-lobes. *&*[<]ced* usually twice as many as petals, in antipetalous pairs ^{em*^{der};} by the lamina, rarely numerous; filaments short or long, ^{sK*¹---} anthers 2-celled with dehiscence longitudinal, lateral, rarely ^{*² ^} locellate. *Ovary* inferior, half-inferior or rarely ^{superb} *locular* rarely by absorption of septa 1-locular; *style*, [^] simple filiform; stigma simple or lobed, usually persistent; *ov* ^{ny} in each *loculus* usually 2> **pen** duloug> *Fruit* leathery, ^{*[>]<< \ v;} indehiscent, 1-celled, 1-seeded. *Seed* pendulous, arillate or ^{noⁱⁿ} albumen fleshy or 0; embryo in albuminous seeds ^{minu[^]stiu} ^{0 ^ TM ^ 61 Ongated; Often} germinating while the fruit **IB** **e tree.**

*Sea-shore trees (mangroves); seeds without albumen; embryo **ijj** • large radicle germinating while the ^{the ^ >> ' -tUl << ^ tree : - * ^ by} **†Calyx-segments and petals not more than** ^{^ calyx su^roun} connate bracteoles :—[p. 475] **Calyx-segments and petals** each 4; petals entire; **stamens 8; ovary 2-celled** **Rhizophora.** **Calyx-segm** ³ **Petals em[^]inTte P!?** ^d **ls each** ^{^ T} petals not entire; - **Ceriops.** **Petals lacerate.** ^{L' menS 1<M2!} ovary 3-celled **andelia.** ^{at 6, 8 stain} **ens** indefinite; ovary 1-celled.

^{to} ² ^{ca} ^{yx} ¹ ^{se} gments and petals 8-14; calyx without bracteoles; petals
ⁱⁿ ^{la} ^{nc} ^j Stamens 16-28; ovary 2-4-celled [p. 474].....Bruguiera.
^{calv} ⁱ tree? Seeds albuminous; embryo not germinating till fruit falls;
 wu be minutely bracteolate [p. 474].....Carallia.

319. Rhizophora Linn.

^L ^{ittoral} ^{tre} ^es; branches marked by leaf-scars; leaves opposite,
^{Coi} ^a ^{ceous} » glabrous, mucronate; stipules large, interpetiolar,
^{Ca} [^] ^{COUs} - Flowers rather large, in axillary, 2-3-chotoinously
^{divi} ^{gd} ^{few} ^{fl} ^o ^w ^e ^r ^e ^d cymes; bracteoles connate round base of
^{cal} ^{cor} ⁱ ^X ^{*} ^{Sepals} ⁴ » ^{co} ^{nnate} in a short tube, adnate to ovary; lobes
[^] ^{laceous}, valvate. *Petals* 4, entire, inserted on a fleshy disk,
^{li} ^{aw} ^e ⁱ ^s 8, inserted with the petals; filaments short; anthers
^{be} ^{wp} ^p ^e ^l ^s 2, connate in a half-superior ovary, projecting
² ^{Jl} nd ^{the} ^{calyx} as a fleshy cone; chambers 2-ovuled; stigma
^{ol} ^o ^{Fr} ^{Ut} ¹ ^{celle} ^d, 1-seeded, indehiscent, coriaceous, ovoid or
^{base} ¹¹¹⁰ ^{With} ^{the} ^{reflexed} » persistent calyx-teeth surrounding its
^{perfora} ^{Seel} ^P ^{en} ^{dulous}, germinating on the tree; radicle elongated,
 ting the apex of the fruit.

^{Lea} ^{ves} ^e ^{Uiptic} » cymes longer than the petioles, from axils of present
^{leay} ^{es} ^{USU} ^{ally} ³ ^{fl} ^{owered}; flowers pedicelled; petals fleshy, lanate in
^{front} *viucronata*.
^{Leav} ^S ^{oblong} ^{to} oblong-lanceolate; cymes shorter than the petioles,
^{from} th ⁱ ^{ll} » glabrous. *conjutfiata*.

756 < R RHIZOPHORA MUCRONATA Lamk; F. B. I. " 435; E. D.
 R- 242. B. Mangle F. I. ii. 459.

Sundribns; coasts of Orissa and Chittagong.

A small evergreen tree. Beng. Khamo, bhora; T Jrvyá Kái.

757 - RHIZOPHORA CONJUGATA Linn.; F. B. I. ii. 436.

Sundribuns.

-A small tree. Beng. Khamo, bhora.

320. Ceriops Am.

Shrubs; branches thick; leaves opposite, ovate or obovate;
^{sti} ^{pules} interpetiolar, caducous. *Flowers* in condensed, 2-3-
^{cho} ^{tomous}, axiUary cymes; bracteoles connate round base of
^{oval} ^v ^{*} ^{Sepals} 5 or 6, connate in a short tube, adnate to ovary;

[Ceriops.

lobes coriaceous, valvate. *Petals* 5-6, emarginate or 12, inserted between the lobes of a fleshy disk in part the petals; anthers oblong or linear. *Carpels* 3, connate at least partially 3-celled ovary, produced above the calyx fleshy cone; ovules in each carpel 2, pendulous; short, base conic; stigma simple. *Fruit* 1-celled, hiscent, coriaceous, obovoid, with the reflexed, persistent teeth surrounding its base. *Seed* pendulous, germinating tree; radicle elongated, perforating the apex of the fruit.

758. CERIOPS ROXBURGHIANA Arn.; F. B. I. C. 972.

Sundribuns.

A large shrub. Beng, Goran.

321. Kandelia W. & A.

Small trees; branches terete; leaves opposite, axillary, dichotomous cymes; bracteoles connate to calyx. *Sepals* 5-6, connate in a short tube, adnate to ovary; lobes linear-lanceolate, valvate. *Petals* 5 or 6, bifid, with 5-lobed, capillary lobes. *Stamens* many; filaments slender, anthers small, oblong. *Carpels* 3, connate in a 1-locular, half-superior ovary, produced beyond the calyx in a fleshy cone; arising in pairs from a central column; style slender, base; stigma 3-lobed. *Fruit* 1-celled, 1-seeded, coriaceous, ovoid, with the persistent calyx-teeth surrounding its base. *Seed* pendulous, germinating on the tree; radicle perforating the apex of the fruit.

759. KANDELIA RHEEDEI W. & A.; F. B. I. ii. 437;

Sundribuns.

A small tree. Beng. Goria; Uriya Rasunia.

322. Brugiera Lamk.

Trees or shrubs; branches terete; leaves opposite, petioled, oblong, entire; stipules interpetiolar, caducous, rather large, solitary or cymose on axillary peduncles; bracteoles 0. *Sepals* 8-14, connate in an obconic or campanulate calyx; lobes lanceolate, valvate. *Petals* 8-14, 2-lobed or emarginate, convolute at base, appendiculate. *Stamens* 16-28, in pairs opposite the involving petals; filaments filiform;

...nllin.]

COUBHETACEM.

others linear, mucronate, as long as the ... W
connate in a 2-4-celled inferior ovary; ovules ... minutely
nate on the axis; style filiform, its base conic, ...
globose. Fruit 1-celled, 1-seeded, indehiscent ...
nate. Seed pendulous, germinating on the tree, ra

Prorating the apex of the fruit.

760. BRUGUIERA GYMNORHIZA Lamk; F. 13-

B.898. *Bhizophora gymnorhiza* F. I. »•

Sundribuns; coasts of Orissa and Ohittagong.

A large tree. Beng. Kankra.

323. Carallia Boxb.

Trees or shrubs; branches terete; leaves ...
ovate or elliptic, entire or serrulate; stipules ...
cons. From small, sessile, usually crowded ...
axillary, 3-lobed; bracteoles ...
connate in a cylindrical ...
lobes ...
toothed or serrate at the apex, ...
the petals; filaments filiform; ...
3-5, connate in a 1-celled or a 3-5-celled ...
produced beyond the calyx; ovules ...
attached axially in pairs above the ...
Fruit usually ...
Seed subreniform, with fibrous testa, ...
curved.

761. CAKALLIA LUCIDA Boxb. C. *rf«»«m»« •

E. D. c. 474.

JE. Bengal; Chittagong.

An evergreen tree with shining leaves.

Kol, Jur.

Order LIH.COMBRETACE*.

Trees or shrubs, often climbing ...
alter nate, sometimes whorled, simple, rarely a-
0. Flowers hermaphrodite or ...
1-sexual, spicate or racemose rarely eymose, biact

lob or e .
 lobel caly f ^ r ol, O n Se2>ah COMate !" a 4-5, rarely 6j .
 accreVeSorI. " " " ^ Va,Vate, P ^ ^ nt, and occasion ^
 «Z ver, fj I_b o v M obeS; tube ad -t« ^ and produced, some
 usually small. Stamens 1-seriate, 4-5, or 2-seriate, 8,10, ^
 indefinite the limb or in the base of the calyx
 ments su
 Anally altelto' f ^ TM, naied or rarel? glandula, and occa-
 dehiscence ZS ^ nodes; aithers versatile, didymous
 by valves. oZ } a , h*end; ^ adnate with de hiscence
 rarely
 tary.pendu w' t USUaJly ^ 3, occasionally 4-7, rarely s^D"
 or d u^paceous 7 ^ apeX_ ^ ^ usu » % indehiscent, leathery
 the accreted ^ T ^ y^ T** Or wing S ed - -metime, crowned by,
 with conv
 cotyledons.

Inflorescence indefinite, TM, ra oemes, spikes, or heads; calix-lobes val
 vate; stamens with t CIS 7 Staminodes at thdr baseS; f ^
 uing by longitudinal slfr
 Petals 0 :- tS, Ovules 2~7, suspended by a long funicle :-

Calyx,imb accrescent in fruit; diffuse ram shrubs

Calyx-limb deciduous; erect t,, Calycopteris.

Flowers in heads e6S or shrubs ,

Flowers in spikes or r» Anog eissus.

Petals 5 or 4 :- Termina lia<

Calyx-limb deciduous • Pl. ^ ^

Calyx-tube not or shortl. With oPPosite leaveS:~

•5 in. long) • i^ro uced, y P^ro(luced beyond ovary (never exceeding

Calyx-tube much prod. T ^ caly x, limb 4"fi d. Combretum.

calyx-limb 5-fid beyond ovary (from -75-25 in. long).'

Calyx-limb persistent ' shrubs Quisquaiis-

alternate leaves , or trees (o^ mangrove-swamps) with

Inflorescence cymosecalyxK^K Luirnitsera.

stammodes at their base- Imbricate; stamens with glands or

ovule solitary, suspended L opening S by recurved lateral valves;

GJ by a sho* funicle; Gyrocarpus.

4. C " W * Itti i Lamk,
 A diffuse shrub wit^d
 Petioled, elliptic or oval ooPln^ brauches 5 kaves opposite, short-
 axillary and crowded in i. Flowers sniall, in dense racemes,
 large Panicles towards the ends of the

branches lanceolate. *Sex>als* 5, connate in a 5-striate calyx-tube. *Pod* beyond the ovary. *J* lobes persistent and accrescent. *Stamens* 10, 5 opposite the calyx-lobes and inserted on the tube. *Carj* 6 > 5 alternate with and inserted between the calyx-lobes. *l* 1018 * *sollfc* ary, inferior; style subulate, simple; ovules 3, pendulous. *f* *Am* a *P^{ex}* of cell. *Fruit* narrow, ovoid, 5-ribbed, villous, lute n t-! *surnioun*ted by the enlarged calyx. *Seed* with convolute cotyledons.

762

- CALYCOPTERIS FLORIBUNDA Lamk; F. B. I. ii. 449; E. D. C. 200. *Getonia floribunda* F. I. ii. 428. *°nssa*; Chittagong. A- diffuse shrub with drooping branches.

325. *Anogeissus* Wall.

p *r* *ee* *S* *01'sllrubs* 5 *leaves* alternate or subopposite, petioled, entire, globose heads on short axillary peduncles; bracts and *S* *Small or lai* *g^e* - *Sepals* 5, connate in a tube, Jong-produced beyond the ovary, subpersistent; lobes small, *infer* *U^s** *actals* *o* - *Stamens* 10, 2-seriate. *Carpel* solitary, simple *or*; *ovules* 2, pendulous from apex of cell; style filiform, *hor* *o* *ntally into* *ense* beads. *Seed* solitary; cotyledons convolute.

Leaves broad, elliptic, obtuse at both ends, glabrous beneath ...*latifolia*.

Leaves acute at both ends, pubescent beneath :—

Leaves elliptic or oblong; bracteoles obovate, often leaflike, large *acundnata*.

T *aves nai** row-lanceolate ; bracteoles small, linear, very deciduous *lanceolata*.

- 763 < ANOGEISSUS LATIFOLIA Wall.; F. B. I. ii. 450; E. D. C. 1149. *donocarpus latifolia* F. I. ii. 442.

Orissa ; Chota Nagpur ; W. Bengal; Behar.

A tree. *Hind*, and *JJriya* Dohu; *Kol*. and *Santal*. Hesel.

- 764. ANOGEISSUS ACUMINATA Wall.; F. B. I. ii. 450; E. D. C. 1146. *Conocarpus acuminata* F. I. ii. 443.

Behar; Chota Nagpur.

A tree 60 feet high. *Beng*. Chakwa ; *Uriya* Pansi; *Kol*. *Gara* hesel, parsia.

[Anogeissus.

765. ANOGEISSUS LANCEOLATA Wall. A. acuminata vai. lanceo-
lata F. B. I. ii. 451; E. D. C. 1146.

Chittagong.
A tall tree.

326. Terminalia Linn.

Large trees; leaves alternate or subopposite, entire or s^{MS} ^{l'-htly} crenulate, often with glands on petiole or on the midrib ^{he} ^{neath} near the base. Flowers small, spicate, the spikes ^{some} ^{times} paniced, <? or the upper flowers of the spikes 6 only; brae [^] [^] narrow, soon deciduous. Sepals 5, connate in a ^{campftI} ^{jvate} calyx, produced slightly beyond the ovary; lobes of limb va [^] ^e triangular, deciduous. Petals 0. Stamens 10, inserted ^{o^} ^{ary-} calyx-tube, with a hairy, epigynous disk between them [»] nd ^{o^} ^{of} Carpel solitary, inferior; ovules 2 or 3, pendulous from ^{aP} ^{Qt} cell; style long, simple. Fruit an ovoid, fleshy and ^{st^n} [^] ^{j'y} coriaceous drupe, with hard, indehiscent endocarp, exte¹ [^] smooth or with 2 or 5 angles or wings. Seed solitary; coty^{1e} ^{don} convolute.

Fruit not winged, ovoid or subcompressed :— lw&y^s
Leaves clustered towards ends of twigs, alternate; spikes a
simple, axillary:—

Petioles very short; base of obovate leaf narrow but cordate, ^{fruit} [^] glabrous, ellipsoid, somewhat compressed, showing when ^{tiy} ^{Catappa.} marked ridges.....^{fruit}

Petioles very long; base of broadly elliptic leaf cuneate; [^] tomentose, globular, when dry showing 5 faint ridges.....^{be ler}

Leaves not clustered, usually more or less subopposite; spikes us^{uay} ^{hen} paniced; petioles distinct; fruit somewhat 5-ridged, at least vr
dry:—

Leaves acute but not acuminate at apex, rounded at base ^{fruit} [^] ellipsoid or obovoid, -75-1-25 in. long.....^{Cie} ^{l'it'}

Leaves acuminate at apex, cuneate at base; fruit oblong-la^{rC} ^{ina.} [^] 2 in. long, slightly 5-ridged, even when fresh.....^{d t e}

Fruit with 5 subequal acute wings; spikes paniculate; leaves oppo^r or subopposite :—

Leaves short-petioled, at length glabrous beneath, oblong or ellipti^{ijj} [^] old trees, lanceolate in seedlings; wings of fruit marked with i^u [^] ascending striations; bark pale, smooth, flaky.....^{na.} th

Leaves distinctly petioled, usually persistently pubescent beneath elliptic or ovate; wings of fruit marked with horizontal striations. bark dark-grey, rough, corrugated^{tomen} ^{tose}

- ⁷⁶6. *TERMINALIA CATAPPA* Linn.; F. I. ii. 430; F. B. I. ii. 444; E. D. T. 312.
Planted.
A large tree with horizontal branches and much-but-tressed trunk. *Vernac.* Deshi-, bangla-, or hindi-badam.
TO ^{The} Country Almond.
- ⁷⁶⁷7. *TERMINALIA BELERICA* Roxb.; F. B. I. ii. 445; E. D. T. 293.
T. moluccana F. I. ii. 432.
Chota Nagpur; W. Bengal; Chittagong.
A large tree. *Hind. Beng.* and *Vriya* Bhaira; *Santal* and *KoL* Lopong. The Beleric Myrobalan.
- ⁷⁶⁸8. *TERMINALIA CHEBULA* Hietz; F. I. ii. 433; F. B. I. ii. 446; E. D. T. 325.
Chota Nagpur.
A large tree. *Beng.* Haritaki; *Hind.* and *Vriya* Harara; *Santal.* and *KoL* Rol, rola. The Black Myrobalan.
- ⁷⁶⁹9. *TERMINALIA CITRINA* Roxb.; F. I. ii. 435; F. B. I. ii. 446; E. D. T. 349.
W. N. and E. Bengal; Chittagong.
A tall tree. *Beng.* Haritaki, harra.
- ⁷⁷⁰0. *TERMINALIA ARJUNA* Bedd.; F. B. I. ii. 447; E. D. T. 282.
***Pentaptera Arjuna* F. I. ii. 438.**
Chota Nagpur; Behar; W. and N. Bengal.
A tall tree. *Vernac.* Arjhan.
- ⁷⁷¹1. *TERMINALIA TOMENTOSA* Bedd.; F. B. I. ii. 447; E. D. T. 361.
***Pentaptera tomentosa* F. I. ii. 440.**
Chota Nagpur; Behar; W. Bengal.
A tall tree. *Vernac.* Asan, asna, saj; *Kol.* Hatana; *Santal.* Atnak'.

327. Combretum Linn.

Large or rarely small shrubs, usually with pendent or scandent branches, occasionally spinous, very rarely trees; leaves entire, pinnated, opposite, sometimes ternate, occasionally alternate. Flowers small, polygamo-dioecious, spicate, spikes often panicled; bracteoles small. Sepals 5 or 4, connate in an urceolate calyx, produced slightly or considerably beyond the ovary; limb dehiscent. Petals 5 or 4, very rarely 0. Stamens 10 or 8, 2-serial, inserted with the petals on the calyx. Carpel solitary, inferior; ovules 2-5, pendulous from apex of cell; style subulate, simple.

773. **COMBRETUM ACUMINATUM** Roxb.; F. L. H- 228 *; F. B. I. L ii. 455.
N. Bengal; Chittagong.
A large scandent shrub. *Vernac.* Patyuni.
774. **COMBRETUM FLAGROCARPUM** Clarke; F. B. I. ii. 455.
N. and E. Bengal; Chittagong.
A large scandent shrub.
775. **COMBRETUM SQUAMOSUM** Roxb.; F. I. ii. 231; r. I*. I.
ii. 456.
Chittagong; N. and E. Bengal.
A large scandent shrub,
776. **COMBRETUM DASYSTACHYUK** Kurz; F. B. I. ii. 47.
Chittagong.
A scandent shrub.
777. **COMBRETUM CHINENSE** Eoxb. J F. I. ii. 5. F. L. X.
ii. 457.
Chittagong.
A large climbing shrub.
778. **COMBRETUM NANDM** Han.; P. B. I. ii. 457; E. D. C. 1744.
Tirhut; Chota Nagpur.
A dwarf shrub, coming up annually after forest fires.
779. **COMBRETUM OVALIFOLIUM** Roxb.; F. I. ii. 226; h. Ji. 1.
ii. 458; E. D. C. 1746.
Chota Nagpur; Orissa.
A large climbing shrub.
780. **COMBRETUM KXTBNSUM** Eoxb.; F. I. ii. 229; F. h. L. 408.
Chota Nagpur; Chittagong.
A large climbing shrub. *Vernac.* Cou-lata.

328. *Quisqualis* Linn.

^ b o, scandent or subscandent shrubs; *haves* opposite, oblong or obovate, entire. *Flowers* in short axillary or terminal spikes, of or white; bracteoles small. *Scpah* 5, connate in an « ^ - caiyx with a narrow, slender tube produced far beyond the ov j ** deciduous with the limb. Prf«b 5- "mall. Ston«»» J J ^ ^ r i solitary, inferior; style filiform, subadnate to caiy- of cell. *8«a subciliolate; ovules JM, pendulous from J- hiscent *i«« a dry, coriaceous, o-angled or 5-winged, submac UniPe. fe, / soiiitary; cotyledons not convolute.

[*quisqualis*.

459;

781. *QUISQUALIS INDICA* Linn.; F. I. ii- 457; *•

E. D. Q. 88.

In gardens everywhere.

A large climbing shrub.

329. *Lumnitzera* Willd.

Littoral shrubs or small trees; *leaves* clustered towards ends of branches, alternate, thickly coriaceous, narrow-obovate, entire or subcrenate. *Flowers* small, in axillary racemes; bracteoles 2, adnate to base of calyx. *Sepals* 5, united in an oblong calyx-tube, produced beyond ovary, persistent. *Petal* 5, oblong. *Stamens* 2-seriate, 10, all those of one series partly or wholly absent. *Carjje* inferior; ovules 2-5, pendulous from apex of cell; *stigma* subulate. *Fruit* a woody, elliptic, oblong drupe, striate or nearly smooth. *Seed* solitary; cotyledons 2.

782. *LUMNITZERA RACEMOSA* Willd.; F. B. I- 452; E. D.L. 576. *Petaloma alternifolia* F. I. ii- 372*

Sundribuns.

A small tree 20-40 feet high. *Bang.* Kripa.330. *Gyrocarpus* Jacq.

A considerable tree; *leaves* alternate, long-petioled, large, entire or (in young plants) lobed, clustered towards ends of branches. *Flowers* small, 1-sexual, if very many, ? few, with hermaphrodite flowers sometimes intermixed, in inferior panicles; bracteoles 0. *Sepals* 4-7, united in a short tube; *Petals* 0. *Stamens* 4-7, inserted at base of calyx, alternating clavate glands; anthers oblong, small, valvular. *Ovary* 0. ? and *Sepals* 4, connate adnate to ovary; lobes of limb in pairs, outer very small, inner accrescent in fruit. *Petals* 0. *Stamens* 0 or in 9-celled; solitary; ovule solitary, pendulous from the apex of long-styled, stigma sessile. *Fruit* a bony nut, crowned by the spatulate inner calyx-lobes. *Seed* solitary; cotyledons convoluted.

783. *GYROCARPUS AMBKICANUS* Jacq. *G. Jacquini* F. I- 461; E. D. G. 780.

Orissa; S.-W. Bengal, near the sea.

A considerable tree; perhaps only planted in our

Vernac. Zaitan.

Order LIY. MYRTACEA.

Trees or shrubs, rarely herbs. *Leaves* opposite, rarely alternate or ^{or} ^{pin} ^{fali} ^{nate} ^T ^{nerved} [>] and ^{and} ^{visually} with an intermarginal nerve, generally ^V coriaceous and gland-dotted; stipules 0 or minute, fugacious. ^{Fl} ^o ^{Wer} * regular, rarely slightly irregular, hermaphrodite or some- ^{ti} ^e ^s polygamous, axillary, rarely subterminal, often 2-bracteolate. ^{sk} lining the calyx-tube. *Sepals* connate in a superior or half- ^m ^{perior} ^c ^{al} ^x ⁵ limb usually 4-5-, sometimes many-fid or -partite, ^{persistent} or deciduous, valvate or imbricate, occasionally entire ^{or} ^{closed} in bud. *Petals* 4-5, rarely 6, or fewer by abortion, or 0, ^{equal}, or the outer slightly larger, usually much imbricate, ^{Stamens} usually numerous, several-seriate, rarely definite and 2- ^{or} ¹ ^{sc} ^{pet} ^{ate}, and alternate with ^P ^{etals}; filaments inserted with ^{na} ^s on the disk, free or somewhat ^{connate} at the base or con- ⁱⁿ bundles opposite the petals; anthers subglobose. 2-celled; ^{deh} ^{iscence} longitudinal, lateral. *Ovary* half-inferior or inferior, ^{cro} ^T ^{hy} ^{the} ^{disk}, ¹ ^{locular} with 1 or more ovules, or 2-many- ^{loc} ^{ular} ^{or} ^{bearded} at the top; stigma simple; ovules campylo- ^{tropous} or anatropous on usually axial placentas, rarely in 1-locular ^{ovaries} on 2 ^{parietal} placentas. *Fruit* usually tipped by the calyx- ^{limb}, occasionally half-superior, loculicidally dehiscent above by ^{as} ^{many} ^{valves} as there are cells, or dry, indehiscent, 1-seeded, or ^{an} ^{inde} ^{hiscent}, flesh ^{bcn} [<] ^y with cells ^{man} [>] (1-seeded or, by arrest) ¹ ^{seed} ^{ed} ^{scds} ^{angled} » cylindric, or compressed; testa hard or ^{membran} ^{ous} sometimes winged; albumen 0; embryo straight, ^{curved} » or spirally twisted.

^{with} dehiscent, a loculicidally 3-valved capsule; leaves alternate, nerves ^{seve} ^{ral} ^{from} base; bark peeling in spongy flakes; individual flowers ⁱⁿ ^{spikes} or heads..... Melaleuca. ^{Ult} not dehiscent; bark not flaky; flowers pedicelled, in racemes or ^{cy} ^{or} solitary :— ^{leaves} opposite, usually gland-dotted; fruit berry-like :- [p. 486] ^L ^{imb} of calyx closed in bud; lobes subimbricated, rather deeply ^v ^l ^v ^{ately} separated when in flower; seeds numerous..... Psidium. ^{Ur} ^b of calyx 4-5-lobed or -partite in bud, not further divided when ⁱⁿ ^{flower}; seeds few :—

[Melaleuca.]

Ovules pendulous from the top of the locules Pimenta.
Ovules from the whole inner angle or from a somewhat prominent
septal placenta :—

Embryo with small seed-leaves Myrtus.

* Embryo with large, fleshy seed-leaves Eugenia.

We s alternate, not gland-dotted :- [p. 485] ricftl,

Stamens partly imperfect (without an U m) fluitovocl or spherishy; seeds many. Carey*

Stamens all perfect; fruit angn\ar, "fibrous"; seed solitary
Barring*onia.

331. Melaleuca Linn.

Trees or shrubs; ; moesa iter e, rrlly opposite, entire, la«*J*
or lme ar flat or subteretei ^ Qr n J ^ ; e i — Flowers spl ca
or 2 f 6 t The heads or spike* ««ne in the axil of a flow^ ;
taaots deoduous. Sei>a/S g, counate in a subglobOSE 0 ^ - * ^ ,
tebes Imbllicate or open. Petals 5, spreading, deciduous. 8*««
many, none or less united at their bases into 5 bundles oppo*ite
/> petals; anthers versatile; cells paraUel, with dehisence long
tudinal. Carpel* 3, connate in an inferior ovary, enclosed u. * h

«£; rtjrla filiform; stig,na smaU, usually capitate. Fr»«««*
Bvle open g loculicidally from the a ^ y 3 valves. S ^ s
wedg_e, ha_pe d; testa thin; embryo straight.

784. MELALEUCA LEDCAMNDBONLinn.; F. I. iii- W < FIB *
«• 465; E. D. M. 340.
C Bengal, in parks and gardens.
A tall tree. Vernac. Cajapnti.

332. Psidium Linn.

Trees or SIU«Ubs; leate » oPPO-site, entire, not dotted. i*«"i.
large, white : peduncles solitary or fewflowered, axillary. SVf
4 or 5, quite COUnate fa bud in an ««=eo'ato or obovati" ealy»
limb separat valvate. 5 free. Stamens
m , i m ~ 8 M « 1 «ri« on a wide disk; anthers «*W 1g,
fixTneTl dse, dehisence longitudinal. C«y,c? s 2-7 a* " *
or 5, confl 0 ^ r ^ With - ^ y * » * TM . 0 ^ 68 to ^
form, often thickish; stigma peltate or
the cUyx-ihnb or n t T ^ , " PJ,rifonn berry, ^ ned by
hard; embryo curvT'k f* Wany or ^w, subremform; testa
y rved, ho r seshoer or subspiral.

⁷85. *PSIWUM* GBYAYA Linn.; F. B. I. »• 468; E. D. P. 18*8.
 ‡ *Vyriferum* F. I. ii. 480. *P. pomiferuvi* F. I. »• *a°.

Naturalised and planted in all the provinces.

A small tree. *Hind.* Amrud; *Bang.* Kyar. The Guava.

333. *Pimenta* Lindl.

Vagrant trees; *leaves* large, coriaceous, dotted, opposite, penninerved. *Flowers* small, in many-flowered 3-chotomous cymes, in the upper axils. *Sepals* 4 or 5, connate in a small turbinate or campanulate tube, little if at all produced beyond the ovary; ^{TM*}« of limb spreading, persistent. *Petals* 4 or 5, spreading. ^{Si}«'»cn_s many, in several series, free; filaments filiform; anthers *«t, versatile, dehiscence longitudinal. *Carpels* 2, connate matured ovary; ovules 1-4 in each cell, pendulous from near the *P of the inner angle; style filiform; stigma small or uboapitate. ^{V''*} o- small berry crowned by the calyx-limb. *Bee** few, ^{elob}ose or subreniform; testa membranous or hard; embryo ^{mo1*} or ^{less} spiral, with a very long radicle and short cotyledons.

⁷86- *PIMENTA OFFICINALIS* Borg. *P. acris* F. B. I. ü. 462.

Occasionally planted in native gardens, especially in the eastern provinces.

A fragrant tree. The Allspice or *Pimenta*.

334. *Myrtus* Linn.

^{S ^} b s, rarely trees; *leaves* opposite, penninerved, usually ^{Sill!}JI- *Flower*, on axillary, generally slender peduncles, solitary of cymosely 3-7, less often numerous, the central with a show ^{t.*} lateral with longer pedicels; bractcoles under calyx, sometimes leafy, sometimes small. ^{890b} 4 or 5, connate in a ^{tartor} tube, adnate to but hardly produced beyond ovary; lobes of ^{*«**} imbricate or open. *Petals* 4 or 5, spreading. « « « « • ^ ' ^h« in several series; filaments free, filiform or flattened; anthers ^{v«Wt}ile or basifixed; dehiscence longitudinal. *Carpels* ^{ta,} ^{l^h} 4, connate in an ovary with as many perfect or ^{pwtiri.*U*} ^{flow} the septa not always reaching the axis; ^{placentas} ^{^^} ^{tunes} ^{o1«} 4er, sometimes 2-lamellate, with many ovules ^U ^{Togul^J} ^Q ²⁻seriately arranged on the axis; style filiform; ^{stigna} » : ^{ely} capitate. *Fruit* a berry, usually crowned by the calyx ^{h»A} sometimes naked. *Sects* 1-2 perfect, less « * J » T ^ ^{s<l*}enif_{orm}; testa hard or membranous; embryo ^{orsh} ^{te.} ^{sh}ai>cd; radicle very long, cotyledons small or lumu

787. MYRTUS OOMMUNIS Linn.; F. I. ii. 497; F. N. L ii. 462; E. D. M. 921.

In hedges; Behar; Tirhut.

A shrub. Vernac. Belati mehndi. Myrtle.

335. Eugenia Linn.

Trees or shrubs; glabrous or rarely pubescent; leaves opposite, rarely alternate, coriaceous or membranous, penninerved. Flowers solitary, axillary, or in short racemes (axillary leafless branch or in dense terminal cymes, or in lateral or terminal 3-chotous punch*; bracts usually small, deciduous. Sepals 4, rarely connate in a globose or clavate calyx-tube; lobes of limb inwardly connate. Petal, 4, rarely 5 or more, very rarely 0, free and separate or connate in a cap. Stamens many, in several series, filaments slightly connate in 4 bundles; filaments filiform; anthers versatile; dehiscence longitudinal. Carpels 2, rarely 3, connate in a 2-, rarely 3-celled ovary; ovules in each cell numerous; embryo in the form of a small nut. Fruit & drupaceous or dry and fleshy. Wry, crowned by the persistent calyx-lobes. Seed, few, globose or variously compressed; testa membranous or cartilaginous; embryo with a short, thick radicle; cotyledons connate or separate.

Stamens 8-16, with circular or quadrangular disk within or under the anthers; filaments conspicuously 4-lobed, persistent; flowers white or pinkish; fruits globose or turbinate; seeds large, several, or if solitary, some abortive seeds; endocarp thick, fleshy. [p. 489]

Leaves alternate; flowers with 8-16 petals, lateral, calyx-lobes incurved in fruit.

Leaves opposite; flowers with 4 petals.

Leaves incurved
Flowers purplish-red; fruit white *formosa.*

Flowers white; fruit greenish-yellow. *am/lyricaulis.*

Leaves narrowed to the base, tapering not stem-clasping:—

Flowers all lateral, red; leaves tapering into petiole; calyx-lobes incurved in fruit *malaccensis.*

Flowers terminal as well as lateral, or terminal only:—

†Calyx-lobes incurved in fruit:—[p. 48

‡Flowers sessile, in terminal or lateral compact cymes, rose-coloured or white; leaves rounded or subcordate at base [p. 489] *macrocarpa.*

Flowers distinctly pedicelled:—[p. 488]

Leaves rounded or often cordate at base; flowers in lei-
minal and axillary cymes, rose-purple or white; fruit pale-
rose or white..... aquia.

Leaves tapping into petiole; flowers in terminal clustm
only, always white ; fruit dull yellow..... Jap!

Calyx-lobes spreading in fruit; flowers rather long-pedicelici'
in axillary and terminal cymes [p. 488]..... lancafolxa'
*Gal yx inside smooth, with no disk inside or under the stamens ; flowers
8m*U; calyx-limb usually obsolete or truncate after flowering; fruits
^ 1 1 , globular oblong or pyriform ; seeds 1-2 ; endocarp often pulpy :-
CP.488]

§fWere in racemes or cymes; leaves, branchlets, and inflorescences
glabrous :~-[p. 490]

°alyx elongated, clavate ; petals free; flowers in axillary raceme^
clarifl .

Calyx short, hemispherical; petals (except in C\ venusta) falling off
in one piece ; flowers in cymes :—

Leaves bright-green, shining; lateral nerves slender, close and
Parallel, or nearly so :—

Cymes lateral, mostly at the scars of fallen leaves:—

Bark of twigs brown; branchlets of inflorescence sharply
4-angled; calyx subsessile; fruit the size of a pea...{TMUcosa,

Bark of twigs white; branchlets of inflorescence bluntly 4-
angled ; calyx-base narrowed and pedicellate:

Leaves ovate or oblong:- jamholmw.

Fruits ovoid, as large as an olive

Fruits spherical, as large as a pea .
Jambohma var. earyophyUifoly an

Leaves narrowly lanceolate ; fruit ovoid, ^ ^ Z n a .
olive.....

Cymes terminal and axillary, or terminal only:— oblata.

Branchlets rounded, brown ; fruit as large as a W »

Branchlets 4-angled, white; fruit the size of a P « ^ J £

I * ^ M I V ^ 7 o ^ e V i i t o « i main-nerves ^distant, with
reticulate, finer venation between; cymes lateral: -

Cymes compact; calyx with a pedicel-like, narrow base, and
truncate limb ; fruit small, globose, the size of a pea .
balsamea.

Leaves ovate or ovate-lanceolate....."»

Leaves narrowly lanceolate.....tab«»e- TM a.gustifolia.
b obtusely

Cymes laxly panicled; calyx sessile, margin at lim
lobed; fruit the size of a sloe :—

Fruit globose ; leaves not decurrent on the petiole ^{culata.}

Leaves ovate..... ^{obovata.}

Leaves obovate..... *operculata* vai

Fruit ovoid ; leaves decurrent on the petiole ^{operculata}

operculata var. ^{inflorata.}

§Flowers solitary or fascicled in leaf-axils; leaves, branches, ^{creata.}
rescences pubescent [p. 189]..... ^{gustifolia.}

788. EUGENIA POLYPETALA Wall.; F. B. I. ii. ^{47, 2, Ji, A}

folia F. I. ii. 490.

Chittagong.

A small tree.

, 789. EUGENIA FORMOSA Wall.; F. B. I. ii. 471; E. D. ^{B> 409.}

Chittagong.

A large tree. *Beng.* Phul-jamb.

790. EUGENIA AMPLEXICAULIS Roxb.; F. I. ^{483; .-p.]}. I-}

ii. 471.

Chittagong.

A large tree.

791. EUGENIA MALACCENSIS Linn.; F. I. ii. 483 ; F. ^{J³ I. u. 471;}

E. D. E. 444.

Planted in E. and C. Bengal and in Chittagong.

A shrub or small tree. *Beng.* Malacca jamrul. ^{^.}

792. EUGENIA MACROCARPA Boxb.; F. I. ii. 497 ; F. B. I. ^{x h}

Chittagong.

A small tree. *Beng.* Chalta-jamb.

793. EUGENIA AQUEA Burni.; F. I. ii. 492; F. B. I. ^{4/ A} ^{^ p.}

B. 396.

Chittagong.

A medium-sized tree. *Beng.* Jambo. ^{.. ^.}

794. EUGENIA JAMBOS Linn. ; F. I. ii. 494; F. 33. I. ^{.. ^.}

E. D. E. 432.

N. and E. Bengal, cultivated ; perhaps wild in ^{the Duars.}

A medium-sized tree. *Beng.* Gulab-jamb.

795. EUGENIA LANCEFOLIA Eoxb.; F. I. ii. 494. ^{B. Wallichii}

var. *lanceifolia* F. B. I. ii. 475.

Chittagong.

A medium-sized tree. *Beng.* Poora-jamb.

796. EUGENIA CLAVIFLORA Roxb.; F. I. ii. 488; F. B. I. ^{ii. 484 ;}

E. D. E. 407.

Chittagong.

A tree. *Vernac.* Lamba-nali-jamb.

- 797* EU GKNIA FRUTICOSA Roxb.; F. I. ii. 487 ; F. B. I. ii. 499.
E. Bengal; Chittagong.
- 79fi ^ Snifl H tree. Vernac. Ban-jamb.
- y- EUGENIA JAMBOLANA Lamk ; F. I. ii. 484; F. B. I. ii. 499;
E- D. E. 419.
Planted in all the provinces ; sometimes semi-wild.
A medium-sized tree. Hind, Jaman ; Beng. Kala-jamb,
3amb*, Kol, and Santal. Kuclo » • Ur Wⁱ Jamo, jamkuli.
- 798/9 y/2. Var. CARYOPHYLLIFOLIA F. B. I. ii. 499; E. D. E. 428.
#• *caryophyllifolia* F. I. ii. 486.
Orissa; Chota Nagpur.
- 79Q ^ tedium-sized tree. Vernac. Chota jamb.
- EU GENIA HKYNEANA Wall.; F. B. I. ii. 500; E. D. E. 416.
Behar; Chota Nagpur.
A shrub in river-beds and nullahs. Santal. and Kol.
^ ara kudo.
- 800 EUGENIA OBLATA Roxb.; F. I. ii. 493; F. B. I. ii. 492;
E- J). E. 450.
Chittagong.
- 801 A. medium-sized tree. Vernac. Gulam.
• EUGENIA VENUSTA Roxb.; F. I. ii. 491; F. B. I. ii. 488.
ppera.
802. ^ A small tree with drooping branches.
EUGENIA BALSAMEA Wight; F. B. I. ii. 499.
N. Bengal.
A
- 802/2 Small tree <
Var. ANGUSTIFOLIA F. B. I. ii. 499.
Chittagong.
A small tree.
803. EUGENIA OPERCULATA Roxb.; F. I. ii. 486; F. B. I. ii. 498 ;
E. B. E. 458.
N. Bengal; E. Bengal; Chittagong.
A. large tree. Beng. Boti-jamb ; Hind. Rai-jamb; Kol.
To Pa ; Santal. Totonopak'.
- 80Q- Ud/2. Var. OBOVATA F. B. I. ii. 498; E. D. E. 458.
Chota Nagpur; N. Bengal.
- A large tree.
- fin -
OU3/3. Var. PANIALA F. B. I. ii. 498. E. Paniala F. I. ii. 489 ;
E. D. E. 460.
Chittagong.
A large tree. Beng. Paniala jamb.

804. EUGENIA BRACTEATA Roxb.; F. I. ii. 490 ; F. B. I- »• 502,
Orissa.

A shrub. Beng. Hidjli menadi.

336. Careya Roxb.

Small undershrubs or large trees ; leaves alternate, crowded towards the ends of branches, membranous, somewhat serrate or crenate, penninerved, not dotted, narrowed to the sessile base. Flowers large, showy, in racemes or inflorescences. Sepals 4, connate in a campanulate or funnel-shaped tube hardly produced beyond ovary; lobes ovate, imbricate. Stamens very many, many-seriate, connate at their base; filaments filiform, the outermost and innermost sterile. Carpels 4-5, connate in an inferior ovary with an annular epigynous disk ; ovules many, in two rows in each cell on vertical axial placentas; style long, simple; stigma filiform. Berry large, globose, fibrous berry, crowned by the persistent calyx lobes; dissepiments subobsolete. Seeds many, ellipsoid, embedded in pulp ; albumen 0; embryo large with obsolete cotyledons.

Undershrub with perennial woody rootstock, the shoots annual, springing up after forest fires..... herb***-
Tree 30-60 feet high..... arbor*-

805. CAREYA HERBACEA Roxb.; F. I ii. 638; F. B. I. ii-- 510;
E. D. c. 580.

N. Bengal.

An undershrub. Beng. Bhui dalim.

806. CAREYA ARBOREA Roxb.; F. I. ii. 638 ; F. B. I. ii- j U ;
E. D. c. 563.

In all the provinces.

A tree. Hind. Kambi; Santal. Kambir; Koh Asanda.

337. Barringtonia Foist.

Trees; leaves alternate, crowded towards ends of branched stems or crenate-serrate, penninerved, not dotted. Flowers in branched or lateral racemes or interrupted spikes. Sepals 4-5, connate in a calyx-tube, scarcely produced beyond ovary; lobes of limb 3-5 imbricate, or 2-4 valvate, imbricate, adnate at base to staminal tube. Stamens very numerous, many-seriate, connate below;

filaments filiform, long, all fertile. -Carpels 2-4, connate in a 4-celled inferior ovary, crowned by the annular epigynous disk; sinus 2-8 in each cell, pendulous; style long, simple; stigma umbilicate; fruit a fibrous berry, crowned by the persistent calyx- or lobes; globose or quadrangular, by abortion 1-seeded. Seed ovoid psoid; albumen 0; embryo large; cotyledons subobsolete.

Calyx valvate; fruit ovoid, when ripe slightly 4-angled towards base

Ovary slightly imbricate; fruit oblong, fusiform, markedly 4-angled
racemose.
but.....acutanguli.

807* BARRINGTONIA RACKMOSA Bl.; F. I. ii. 634; F. B. I. ii. 507 ;
E. D. B. 193.

Sundribuns.

808 A tedium-sized tree. Be?ig.. Samundra.
BARRINGTONIA ACUTANGULA Gaertn. ; F. I. ii. 635; F. B. I. ii. 508; E. D. B. 180.

in all the provinces.

A small tree. Hinch Hidjal; Beng. Hidjal; Uriyob Kinj, hidjara.

Order LY. MELASTOMACEJE.

Herbs or shrubs, sometimes climbing; rarely trees. Leaves oppositely whorled, generally petioled, entire or nearly so, rarely innately nerved from near the base; stipules 0. Flowers terminal or axillary, cymose or racemose, rarely corymbose, rarely corymbose; disk or solitary. Disk occasionally present as a membranous or tuberculous extra-staminal corona. Sepals connate as a calyx with 4-5, sometimes 3- or 6-lobed, occasionally truncate, rarely lobed as a cap. Petals as many as lobes of calyx, inserted on margin of tube, contorted. Stamens 1-seriate, as many as or more than, often twice as many as petals; filaments inserted inwards in bud, inserted with petals, often alternately shorter or longer, sometimes alternately perfect and rudimentary; anthers 2-locular, basifixed; connective often appendaged near the base by bristles or tubercles or a spur; dehiscence usually terminal, rarely by short, longitudinal, introrse slits. Ovary 4-5-, rarely 3- or 6-locular, very rarely 1-locular; style simple,

[Osbeckia.

filiform, rarely short* ; stigma punctiform or truncate or capitate, simple or lobed; ovules many, anatropous on axial or less often on parietal placentas, rarely few on a free, central place larly by included in the calyx-tube, capsular, dehiscent irregularly. slits or valves at the top of its cells, or an indehiscent. Seeds minute, usually very many, rarely solitary; embryo with short, very rarely with long, convolute cotyledons.

Leaves 3- or more-nerved from base; ovary 4-5-celled, radiating from axis; ovules and seeds very many; fruit capsular:—

Petals 4-5 ; seeds curved through half a circle, minutely tuberculate:—

Stamens all alike

Stamens very unequal

Petals 3 ; seeds straight, oblong or wedge-shaped, often angular

Leaves pinnately nerved ; ovary 1-celled, placentas free, cells usually 9 ; seeds solitary; fruit a berry.....

338. Osbeckia Linn.

Herbs or shrubs, usually erect; branches generally 4-nerved; leaves opposite or occasionally ternate, entire, subconnate, 4-nerved. Flowers terminal, solitary, capitate or paniculate or white ; bracts usually conspicuous. Sepals 5 or 4, an ovoid tube, beset with stellate hairs or pectinate sea pubescent, with usually stellate, rarely simple hairs.

4. Stamens 10 or 8, equal or subequal; anthers oblong or attenuate or beaked; connective not produced a little slightly swollen or 2-tuberculate. Carpels connate in an 5- or 4-celled ovary, more or less adnate to calyx-tube numerous, on placentas radiating from the axis ; style long, Fruit a capsule opening at its free apex by 5 or 4 pores, many, curved, minutely tuberculate.

* Perianth normally 4-merous:—[p. 495]

Anthers not beaked; annual herbs:—

Capsule oblong, distinctly 8-ribbed; plant 4-16 in. high

Capsule ovoid, very faintly ribbed ; plant 2 in. high

truncata var.

Anthers beaked:—

Flowers small; calyx-tube campanulate; a herb with drooping branches [p. 495].

connective not produced but with 2 tubercles in front. *Carj els*
 connate in a usually 5-celled, rarely 6-7-celled *ov a ^ \ * dnate to*
 calyx-tube, apex setose; ovules very many on *axi * 1*
 placentas; style filiform, simple. *Fruit* an irregularly *ehi gcent,*
 coriaceous, or soft, berry-like capsule. *Seeds* minute, *num ero \ & i*
 curved; minutely punctate.

814. MELASTOMA MALABATHRICUM Linn.; F. I. *ut 4 U 5, * \$ J3. I-*
 ii. 523; E. D. M. 359.

In all the provinces except C. Bengal and Sundn *t - bun S,*

A spreading shrub, 5-6 feet high.

340. Sonerila Boxb.

Herbs, rarely shrubby below; *leaves* membranous or *somew ^*
 fleshy, opposite, those of a pair similar in shape but *often di ferejit*
 in size or of different shapes and then as if alternate, usual *ly some"*
 what oblique, 3-7-nerved from the base or near it, rarely *y pen j.*
 nerved. *Flowers* pink or white, in scorpioid, simple ** or ^ ic,*
 umbellate cymes. *Sepals* 3, connate in a turbinate, *su cy ^ ^*
 or campanulate tube; lobes or teeth small. *Petals* 3, *y ^ ^*
 oblong or obovate. *Stamens* 3, equal, rarely 6, and al *ternat ^*
 slightly unequal; anthers linear oblong or lanceolat *e > o u s c*
 acute or acuminate, minutely 2-lobed at base, without *jap P 0, idage g.*
dehiscence apical, porous. *Campeks connate in aa 3-cell d oval y ^*
 with depressed apex, adnate by narrow, longitudinal *feet a to*
 calyx-tube; ovules numerous; style filiform; stigma *i ? in l l te ov*
 capitellate. *Fruit* a capsule, enclosed in the persistent *? ongy*
 calyx-tube, trigonous, subcylindric, turbinate or *heini spherical.*
 dehiscing apically by 3 valves or 6 teeth. *Seeds* minute, *n ul nerous.*
 ovoid, pyramidal or clavate, smooth or tuberculate.

815. SONERILA TENERA Royle; F. B. I. ii. 530.

Chota Nagpur.

A herb,

341. Memecylon Linn.

Glabrous shrubs or trees; *leaves* opposite, short *etioled o r*
 sessile, coriaceous, orbicular-ovate or lanceolate, entire, *P el l ni.*
 nerved, rarely 3-nerved. *Flowers* usually in small axillary, *t * I o **
 terminal, simple or paniced cymes or umbels; bracteoles *u * a cr*
 the calyx paired. *Sepals* 4, connate in a campanulate, *gl " bl o l l s*
 tube; limb dilated, truncate or shortly lobed. *Petal* * 4, blue *o r*
 white, rarely reddish. *Stamens* 8, equal; filaments long 5 *an th ^ s*

short; c
Vchh ^{connec}live with a posterior process; dehiscence anterior
glabrou ^{D S, Gar \$Gls 4} connate in an inferior 1-celled ovary, with
radiating ^{S a P^{ex}} capped by a convex or depressed disk with 8
rarely more; ^{8100Ve^5} ovules whorled on a free central placenta, 6-12,
berry ^{Style filiform} simple. Fruit a globose or ellipsoid
ledon ^{Crown(* bY} the calyx margin. Seed solitary, large; coty-
s convolute.

Branchlets rounded or only faintly 4-angled..... edule.
Branchlets distinctly 4-angled or almost 4-winged pauciflorum,

816. MEMECYLON EDULE Roxb.; F. I. ii. 260; F. 13. I. ii. 563;
E« D. M. 439.
Chittagong,

817. ivr^{A Shrub or small tree}
• MBMECYLON PAUCIFLORUM Bl.; F. B. I. ii. 555.
Chittagong,
A small tree.

Order LYI. LYTHRACEJE.

^{LeeSj sni>}ubs, or herbs, with often 4-angled branches. Leaves
enti ^{e, o*>P0sifce, so} sometimes whorled, rarely alternate; stipules 0.
Ploio ^{BexuT* regul^1*J} hermaphrodite, rarely oblique, very rarely 1-
per ^{a- •Dh** o»} or annular. Sepals connate in a calyx with free,
lobe ^{iste ^J tUbe, lobes 3~6) valvate} often with additional accessory
outh ^{**etal* as many as} calyx-lobes, rarely 0, inserted near
sert A of tUbe, Stamens few or numerous, 1-many-seriate, in-
fect ^{6 on c} calyx-tube, equal or sometimes a few smaller or imper-
H* ^{filamen}ts usually filiform, rarely subdeclinate; anthers
Satle, inflexed in bud; connective sometimes thickened; dehis-
cence longitudinal. lateral. Ovary free, rarely inferior, in the base
of the ^{Salyx, tube, 2}-6-locular; style long; stigma capitate, rarely
2-lobed. ^{ovules} numerous on axial, rarely on parietal placentas.
hiscent or indehiscent, coriaceous or membranous, free or
ab ^{ore} or less adnate to base of calyx-tube, 2-6-celled, or by
sorp^{tkm} of septa 1-celled. Seeds, numerous, angular, terete, or
wln ^{S<l;} albumen 0; embryo straight; cotyledons usually flat,
sol ^{*eti}mes convolute.

^C₀X thin, membranous; low herbs with very small flowers:—[p. 498]
TH ^{erbs} in muddy soil; stems not submerged [p. 498 Ammannia.

[Ammannia.

Herbs growing in water; submerged except flower-spike IP. 497]

Hydrocotylurum.
tubs with con-

* Calyx thickly herbaceous or coriaceous; trees or shrubs with conspicuous, often showy flowers :—[p. 497]

Flowers secund; stamens declinate; calyx curved; leaves dotted beneath; calyx-tube free from ovary. **Jordia.**

Flowers symmetrical; stamens not declinate; calyx straight not dotted :—

Calyx-tube free from ovary :—

Stamens definite:—

Stamens 4-5, as many as lobes of calyx ; petals 2-celled, 2-valved **Lawsonia.**

Stamens 8, twice as many as lobes of calyx; petals 4-celled, dehiscing irregularly. **Lawsonia.**

Stamens numerous :—

Fruit capsular; seeds free, not imbedded in pulp **Dua.**

Stamens in one row; capsule 4-8-celled ; seeds winged **Lagerflora.**

Stamens in two or more rows; capsule 3-6-celled with a broad wing. **Lagerflora.**

Fruit berry-like, 10-15-celled ; seeds imbedded in fleshy fruit with coriaceous pericarp ; seeds pulpy. **Punica.**

Calyx-tube adnate to ovary ; stamens in several rows, coriaceous pericarp ; seeds pulpy.

342. Ammannia Linn.

Annual glabrous herbs of marshy places; branches angled; leaves opposite and alternate, sometimes whorled; stipules 0. *Vloivers* small, often dimorphic, axillary, solitary, or in terminal spikes, or in small axillary, 3-cymes ; bracteoles under calyx usually 2. *Sepals* a small, campanulate or subtubular calyx, often with teeth or folds between the lobes of limb. *Petals* 3-5, sometimes obsolete, inserted on calyx-tube between the *Stamens* 2-6 or 8, inserted on the calyx-tube. *Carpels* 2-4, nate in a 2-5-celled, or by absorption of septa 1-celled enclosed in the calyx-tube; ovules numerous on axial placenta style filiform, short or long ; stigma capitate. *Fruit* a globose ellipsoid, membranous capsule, enclosed in the calyx, opening 2-4 valves or dehiscing irregularly or transversely. *Seed* small, ellipsoid or nearly hemispheric, with rounded back; raphe on somewhat flattened inner surface.

often 4-
ire;
ef
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n
n

Flowers in close-set spikes, or axillary solitary; capsule regularly 2-4-valved.

^X m fruit campanulate, tube longer than broad :—

owers in close-set terminal spikes :—

Ca capsule 4-valved, not very much longer than broad; leaves orbicular rotundifolia.

CApsule 2-valved, much longer than broad; leaves ovate or elliptic tennis.

Pi ower axillary > solitary; capsule 2-valved, much longer than broad :—

CaUline leaves elliptic, prominently nerved beneath; floral leaves smaller, usually approximated on axillary subspicate branchlets

peplodes.

PAUline leaves linear; flowers axillary, solitary, not at all spicate;

Very minute herb. dentelloide*.

Calyx in fruit hemispheric, tube as broad as or broader than long;

flowP ways split axillary :—

herb sessile, capsule 2-valved; flowers sessile; a very minute

Leaves pygmaa.

^lo narrowly oblong or elliptic; capsule 3-valved :—

le wers distinctly pedicelled, distant below, approximated above;

Fl ves narrowly oblong; a minute herb. *imj)liciu*cula.

I Wers ^Rsile; not at all spicate :-

weaves elliptic-oblong; stamens always 5 :—

Cauline leaves 1 in. long, much larger than floral; stems, usually with many opposite, divergent, axillary flower-bearing branches. ^entandra.

Cauline leaves -25 in. long, hardly exceeding floral

..... jwntanttru var. illecebroulex.

Leaves narrowly oblong, subcordate at base; stamens sometimes 6, petals often fimbriate. penhnulra xixr. Jimbriata.

Flowers in axillary cymes or clusters; capsule bursting irregularly :—

Leaves pering to the base, usually more or less distinctly petioled ;

capsule bacci/em.

Pl, ^rlobose; leaves lanceolate.

*Cal rounded, cordate, or subauriculate base :—

Calyx in fruit smooth; capsule globose :— [p. 500]

flowers in axillary clusters :— [p. 500]

flowers sessile, clusters many-flowered; leaves lanceolate, rounded at base; capsule not covered by calyx-teeth xalicifolia.

Flowers pedicelled, clusters few-(2-5)-flowered; leaves oblong, cordate at base; capsule hidden by calyx-teeth cordata.

[*Ammannia*.

BENGAL PLANTS.

Flowers in peduncled cymes; leaves elongated, ^{obv} auricled at base; capsule not covered by calyx-teeth ^{gub.} [p. 499]

Capsule much exceeding calyx-tube, -1 in. long... ^{sf}

Capsule hardly exceeding calyx-tube, -05 in. long... ^{fl.}

•Calyx in fruit 4-angled and distinctly 8-ribbed; capsule ^{llisoja;} flowers in pedunoled cymes; leaves elongated, oblong, su ^{bauri r^} at base [p. 499]..... ^{ctandra.}

818. AMMANNIA ROTUNDIPOLIA Ham.; F. I. ii. 425; *
ii. 566. ^{p p. I.}

In all the provinces. ^{j-tobes.}

A common weed in rice-fields and by sides of ditc

919. AMMANNIA TENUIS Clarke; F. B. I. ii. 567.

Behar; in wet places.

820. AMMANNIA PKPLOIDBB Sprang.; F. B. I. ii. ^{A weed >} ^{Q on} ^{nat}
F. I. ii. 427.

In all the provinces.

A common weed in rice-fields and beside ditches.

- MI. AMMANNIA DENTELLOIDES Kurz; F. B. I. ii. 568.

Behar, on Parasnath; N. Bengal, common.

«^{A pygmy weedlet, on wet roadways, &c.}

- *U. AMMANNIA PYGMJEA Kurz; F. B. I. ii. 568.

In all the provinces.

A pygmy weedlet, on wet roadways, &c.

- «[^]. AMMANNIA SIMPLICIUSCULA Kurz; F. B. I. ii. 568.

Chittagong.

^A Pygmy weed, on borders of rice-fields.

824. AMMANNIA PENTANDRA Roxb.; F. I. ii. 425; F. 13. ^{l, n, r, g,}

In all the provinces.

A common weed of rice-fields, roadside ditches, and 0 moist spots. ^{t, i, e, r}

- 824/2. Var. ILLECEBROIDES F. B. I. ii. 569.

ChotaNagpur; Orissa.

A rice-field weed.

- 824/3. Var. HMBBIATA F. B. I. ii. 569.

C. and E. Bengal; Chittagong.

A nee-field weed.

825. AMMANNIA BACCIPERA Linn., F. B. L a > 569. F. D. A- &
A. vesicatoria F. I. i. 4.26.

In all the provinces.

A common weed of all _{wet} places. Vernac. Dád * & >

826. ^A ^{AMMANNU} SALICIFOLIA Monti; F. B. I. ii. 569.
**ehar; C. and E. Berlgal; Sundribuns.
827. ^A Weed of Wet places, less frequent than the preceding,
¹ **MANNIA CORDATA W. & A.; F. B. I. ii. 570.
* Bengal,
828. ^A ^{W6eA} of Wet places, very rare in our area.
• ^{AMANNIA} SENEGALENSIS Lamk; F. B. I. ii. 570; E. D. A. 960.
^{Tirhut}; N. Bengal, Purnea.
829. ^A ^{WeOd} of Wet places - ^{Venae}. Dad mari.
• ^{AMMANNIA} MULTIFLORA Koxb.; F. I. i. 426; F. B. I. ii. 570.
^{In a} the provinces.
830. ^A ^{A weed} of wet places.
^{SIMANNIA} OCTANDRA Linn. f.; F. I. i. 425; F. B. I. ii. 571.
Chittagong.
A weed of rice-fields.

343. Hydrolythrum Hook, f.

^A ^{glab} ^{roUS}, a ¹ ^{ua} ^{Ac} herb; lower submerged leaves whorled, linear, ^S ^f ^{ikes} rising above the water with oblong, bracteiform leaves, ^r ^{lo} ^{Wers} smalli whorled, subsessile, in axils of bract-like leaves, ^I ^o ^W ^r whorls distant, upper aggregate, with bracts often there, ^o ^p ^p ^o ^s ⁱ ^t ^e bracteoles un[<]ier calyx 2, subulate. *Sepals* 4, connate in a ^a ^c ^a ^m ^p ^a ⁿ ^u ^a ^t ^e calyx; lobes of limb triangular, without accessory ^{*eet} [^] ^{Petals} 4, inserted between the calyx-lobes. ^{Stai} ^{nen} ^{*4}, [^] ^{anser} ^{ted} on calyx-tube, with 4 hypogynous, 2-fid scales. ^{With} ⁱⁿ ^{the} ⁿ ⁱ ⁻ ^{Carpels} 2, connate in a free, 2-celled ovary at the base of ^{*A} ⁶ ^{calyx} ^t ^u ^b ^e; ovules few, on axial placentas; style simple, St ^{igma} ^{ca} ^{Pitate}. *Fruit* a small, globose, 2-celled capsule. ^{Seeds} ³ ⁴ ⁱⁿ ^{each} ^{cell} [>] ovoid, concave.

831. ^{HYDROLYTHRUM} WALLICHII Hook. f.; F. B. I. ii. 572.

N. Bengal, Duars, in ditches.

A Water-weed, submerged except the flower-spikes.

344. Woodfordia Salisb.

^A ^{shr} ^{ub}; leaves opposite, subsessile, entire, lanceolate, paler beneath with black glandular dots. *Flowers* scarlet, in short, ² [^] ^l ^c ^u ^l ^a ^t ^e cymes on axillary peduncles, rarely solitary; bracteoles ^L ^{base} ^{oi} ^{pedicels}. *Sepals* 6, connate in a long, tubular, slightly ^c ^U ^r ^v ^{ed} calyx; limb oblique; lobes short, with 6 accessory, minute

teeth between calyx-tube, sometimes below the middle, sessile, oblong, 2-celled numerous on axial placenta an ellipsoid, membranous numerous, narrowly cuneate, smooth

Stamens 12 declinate, inserted at mouth of calyx-tube. Carpelis connate in a tube, style filiform; stigma small.

832. WOODFORDIA FLORIBUNDA

W. 106. Gris. tomentosa F. I. ii. 233.

1-harj Chota Nagpur; N. Bengal.

A Bhwb_wu, long, spreading and red flowers. W-c. Uhas, dhani; Kal. and Sonto/. Icha, ichi*

Lawsonia Linn.

Flowers, rather small, in terminal cymes; bracts deciduous. Stamens 11, usually not paired, sometimes only 4; ovary 4-celled, to 5-lobed; Placentas; style long; stigma ultimately 4-lobed; smooth, close-set on a 4-lobed ovary.

833. LAWSONIA AIBA Lamb. 126.

provinces, and chiefly in the western

A shrub or small tree - Mehndi, Henna, or Indian Trivet.

6. Cryptanthus

Flowers minute, white or pink

Flowers minute, white or pink, ovate lanceolate, petioled with long, slender racemes; gamo-dicocious, fat panicles minute. Sepals 5, rarely 4, at base of pedicels linear, or subhemispherical tube; a small, saucer-shaped, Stamens 5 or 4, in persistent, valvate. Warts connate in a free, globose, between the calyx-teeth. Carpelis 2-lobed ovary; ovules numerous, on 2-lobed stigma sub-2-fid. JrVi a globose,

2-celled capsule, tipped by the persistent style, opening at the top across the septum so as to split the style; pedicel in fruit deflexed.

834 r?ny,elliPsoi <I I testa produced at each end.

CRYPTOLEWONIA PA^CULATA Bl. C. glahra F. B. I. ii. ^4-

(Chittagono.

A tall, erect tree.

347. Lagerstroemia Linn.

f... , f'IC! or shrubs; to»»» opposite, distichous, or the uppermost... g or ovate. Ffotww showy, often large, HI... inal lax. less often dense, ^ ^ " T ^ e, te**.* aPex of peduncles; bracteoles 2 on the pedicels. Sepals, n ^ o * « 7-9, connate in a funnel-shaped, smooth, g ^ e d, val p' almos' ringed calyx-tube; lobes ovate, subacute, 'al-tube ^/b 6, abmetoMB 7-9, rarely 0, inserted at apex of calyx ^ «mbri ?* distinct daw, wrinkled, and with cusped, erose, ox. caly'ff " ^ n s. S << mws numerous, inserted near base of

*ed ovary, sessile at the base of the calyx-tube; ouUes... g > o» axial placentas; style long, curved; sti gma... Fr " H an ellipsoid, coriaceous or woody. "&***... nate below to the calyx, smooth, ellipsoid, vath 3-6 *~... valves. S << b numerous, rarely few, elongated, flat,

Ca -Ringed from their apex.

W ftSmooth» rounded, glabrous:— trees:— Le ^es 2~3'5 in. long; capsule 1 in. long or less. i V6S ^ in. ion.; Cfipsule 1-5 in. long « m« ^ ^ ^ . ^ ^ parviflo effVeS ^ e n beneath; flowers 1.5 in. across or larger; a shrul ^ fl >

i t t , 12 ~ H, 1 > ibb ed and -grooved, covered with a harsh grey pube- ave, ? 6 1, 8 2, 5 in < across " trees:— bove es 101 ^, lanceolate; not pitted and little reticulated a Flos-Regina. tly pitted in C r f broad . elliptic, obtuse or short cuspidate; distinc macrocarpa. ces ses between the pronounced reticulations above...

o. ^ERSTB(EMIA PARVIFLORA Roxb. J F. L " . 5 o 5 J 'F" J. J. 4. J E - D - L. ^, XV - Bengal; Behar; Orissa.

A tree, 60 feet high. *Beng.* Sida ; *Vriya*
Sekrek ; *Hind.* Bakli, seina.

835/2. Var. MAJUSCULA F. B. I. ii. 575.

Chota Nagpur ; S. Behar.

A tree, 60 feet high. *Kol.* Saikre ; *Santal.* krek. 525;

836. LAGBRSTRCEMIA INDIANA Linn.; F. I. ii. 500

E. D. L. 52.

Planted in gardens in all the provinces.

A showy shrub. *Vernac.* Farash, Telinga.

837. LAGERSTROSMIA FLOS-REGINJE Retz ; F. B. L. 42.

I., *Begince* F. I. ii. 505.

Chota Nagpur; Chittagong ; often also
A showy tree. *Vernac.* Jarool; KoZ. and

838. LAGERSTRCEMIA MACROCARPA Wall.

Chittagong.

A large tree.

348. Duabanga Ham.

Large trees with drooping, 4-angled branches; distichous, large, short-petioled, acute, entire, with cordate base. Flowers large, in terminal panicles with branches. Sepals 4-7, thickly leathery, connate calyx-tube adnate to the ovary; lobes valvate, clawed, white, obovate, crisped and undulate. Stamens inserted on a perigynous disk. Carpels 4-8, connate 4-8-celled ovary; ovules very numerous, on diffuse covering nearly the whole of the inner walls of capsule long, curved; stigma capitate, 4-8-lobed. Fruit coriaceous, more or less perfectly 4-8-celled capsule, the spreading leathery calyx; valves 4-8. Seeds minute, ellipsoid; testa produced at both ends into tails

839. DUABANGA SONNERATIOIDES Ham.; F. B. I. ii. *strcemia grandiflora* F. I. ii. 503.

N. Bengal, Buars; Chittagong.

A very tall tree. *Beng.* Bandorhulla;

349. Sonneratia Linn. f.

Glabrous, littoral trees; leaves opposite, petiolled, entire. Flowers large, solitary axillary, or in threes at en

Punica.

branches in a wide band on the ovary, ascending, subglobose. **Leaves** umbrellar-shaped. **U** leaves oblong or obovate-elliptic; calyx 6-lobed; petals 6; stigma capitate, not. **840.** **S** **E**. I). B. 2869. **Stindribuns.**

841. **S** **NERATIA ACIDA** Linn. f. \ F. £ "• ^06; **E**. D. S. 2362, **Stundribuns.** A small tree 15 feet high* **Bcwj.** Ora.

& ^ ' ^ ' Z ^ ~ Z * T M * . B . L i l 579;

350. Punica Linn. A large shrub; branches terete, often spiny; leaves opposite, subopposite or clustered, oblong or obovate, obtuse, entire. Flowers large, orange-red, axillary solitary, or several clustered, **Sepals** 5-7, connate in a funnel-shaped, coriaceous calyx, below adnate to the ovary, and above produced beyond the ovary; lobes of limb **Patent**. **Petals** 5-7, lanceolate, wrinkled, inserted between the lobes. **Stamens** numerous, inserted round mouth of calyx, **Carpels** many, 2-scriate, connate in a many-celled, inferior ovary, very numerous; placentas in some cells axial, in others axillary. **Style** long, bent; stigma capitate. **Fruit**** inferior, many-celled berry, with a hard rind, crowned by the persistent calyx-lobes. **Seeds** very many, angular; testa coriaceous, with a thirty pulpy outer coat; cotyledons convolute.

845. **PUNZCA GRANATUM** Linn.; F. I. ii. 499; F. B. I. U. ^ * **D. P.** 1426.

In gardens, in the western and northern province* especially.

A shrub. **Hind.** Anar, darim I **Beng.** and **Urtya** Dalim.

The **Pomegranatei**

Order LYII. ONAGRACEÆ.

Annual or perennial herbs, sometimes aquatic, rarely i. some
Leaves opposite or alternate, entire or toothed, rarely (i. les Q.
 aquatic species) the submerged leaves much divided; stj**i'lla
Flowers hermaphrodite, regular or slightly irregular, ..
 solitary, rarely spiked or raceined at ends of branched te
 epigynous, lining calyx-tube. *Sepals* connate in a tube aco - v.
 ovary, produced beyond ovary in a valvately 2-5-lobe*#s 1-5,
Petals 2-5, alternate with lobes of calyx, rarely 0. Stan* to
 rarely 5, 6, or 12, 1-2-seriately attached along with petah, & me.
 disk, sometimes one series imperfect; filaments filiformgitu din
 times declinate; anthers dorsifixed; dehiscence longer, almost
 introrse. *Ovary* inferior, rarely half-inferior, 1-6-lucul\$&; *ty
 usually 4-locular, or 1-locular from absorption of sepj-par t'ite;
 filiform, entire; stigma capitate, entire or 4-lobed or [te, rely
 ovules usually anatropous, solitary, or numerous 1-seri^er s of
 numerous manyseriate. *Fruit* dehiscent capsular, eit^eh^cent
 numerous many-seriate. *Fruit* dehiscent capsular, eit^eh^cent
 cidally or loculicidally 4-valved with persistent axis, or iijly sllltl
 nuthkc, or a berry. Q.*" many, lew, oi - usu
 albumen 0 or ver^ acanty; embryo usually obovoid.

...Jussi*^{af}
 ...ns twice as many as lobes of calyx..... iudwM!^{*}
 Siens equal in number to lobes of calyx..... — Qf. UIIks
 Seed solitary; an aquatic, with spongy dilatations on the V. Trapa

351. Jussiaea Linn.

Herbs or undershrubs, marsh or aquatic; ^{leave8^} alternate,
 usually entire. *Flowers* axillary, solitary, yellow or w ^ ^ ^ ^ ^
 teoles usually 2 at apex of pedicel. *Sepals* 4-6, connate te ^ ^
 calyx-tube, hardly produced beyond ovary; lobes ot L ^ 12,
 persistent. *Petals* 4-6, epigynous. Ste/n«w 8, << "j ^ ^ L,
 Liaynous. CoTy«^ 4-6, connate in an inferior 4-6-ceu d ^ styla
 ovules many, several-seriate on vertical axial P^lacenta ^ .ete, oi
 simple, usually short, stigma 4-6-lobed. *Fruit* a linear, tici ^
 icfed 4-6-celled, and 8-12-ribbed capsule; dehiscence sep erous;
 the rib's persistent, or irregular between the ribs. *Seeds* nuin
 testa hard or spongy; cotyledons obtuse.

OXAGIUCE.E.

Ci^en^sobovate <* oUanceolate, obtuse; petals 5 (rarely 6), white ; stems keeping. ... yellow ; stems erect.... f.tf rnttco".

8431 J*»LEA REPENS Linn., F. B. I. ii. 587 . In aU th e provinces. , d^+inff. A herb, creeping in mud on margins of tanks and floating

814 T on the surface oi the water. Beng. Kesara-dam. - 114. • yn»si*A SUFFRUTICOSA Linn.; F. B. I. ii. 587 ; E.D. J- ^ w^<aa F. I. ii. 401. A herb or undershrub, in moist places. Beng. Lai ban laj;iga; Bantal. Dak ichak'.

352. Ludwigia Linn.

Herbs; l^oTM<* alternate, undivided, subentire. Fbwm usually axillary, sessile or subsessile; bracted <-* * ° Jary; Sepals J ^ i i o u s some due E^ 0. lobes J Uter, Persistent. JP<<<<* W8. epigynous, some inferior, Stamens ^' * & * » » » . C^eU 4-5, connate in an axial 4-5-celled C vary i ovules numerous, ^-several-senate o placenta: Style ^ P to ! Btigma capitate. ** <<< a UnCa, " oblong, 4-5-celled eapLle, opening by terminal pores or ruptunng irregularly along the sides. Seed, many, obovoid, smooth.

Capsule inflated, sri 110 ^ sks in mayos in eah || || | ^ I I S : guishable through its walls prostrata. Capsule not inflated, torulose ; seeds in one row in each cell, showing themselves Prominently through its walls prostrata.

845. LUDWIGIA PAKVLOBA Uoxb.; F. I. i. 419 ; F. B. I. ii. 588. W - Bengal; Behar ; Chota Nagpur.

846. LUDWIGIA PROSKATA Boxb.; F. I. i. 420; F. B. I. " . ^ 98, ^ N. and E. Bengal. A Prostrate or decumbent herb, in rice-fields.

353. Trapa Linn.

Aquatic floating herbs ; ^* dimorphic submerged? O P P O ^ e rootlike, P W na «P»tite; floating rosulate, rhomboid, solitary, with a sp long y well; i » g » < * » * . a l ' e x - J i 7 o n n e r S f a e t n the base pe I S < ^ 8 4 - c T M » a t e a s h o r t t u b 6 > ^ . d e s c e n t i n c f the " vary obes penaritent, 2 or all bcom W «P»

[Trapa:

fruit: *Petals* 4, small, white, inserted on the epigynous disk. *Stamens* 4. *Carpels* 2, connate in a 2-celled ovary; ovule solitary in each cell, pendulous top of inner angle; style subulate; stigma capitate. obovoid, bony nut, with 4 prominent angles, 2 or all of spinescent; apical, cylindric beak perforate for protrusion of radicle. *Seed* solitary, inverted; cotyledons very unequal.

Leaves very villous beneath, 2 in. long, 3 in. wide, faintly serrate in front. Leaves slightly villous beneath, 5 in. long, 7.5 in. wide, incised in front.

847. TRAPA BISPINOSA Roxb.; F. I. i. 428; F. 13. I. T. 516.

In all the provinces.

A floating aquatic. Beng. Singhara; Pani-phal.

847/2. Var. INCISA F. B. I. ii. 590.

Chota Nagpur.

A floating aquatic.

Order LYIII. SAMYDACEJE.

Trees or shrubs. *Leaves* alternate, often distichous, entire or slightly serrate, often linear-punctulate beneath; small, deciduous. *Flowers* regular, usually hermaphrodite, axillary, short-pedicelled, fascicled, or less often in panicles. *Disk* perigynous or hypogynous, annular, glandular. *Sepals* connate in a persistent calyx, with a short tube, or a longer tube adnate to ovary; limb 3-7-fid, lobes imbricate or valvate. *Petals* as many as calyx-lobes, often alternating with staminodes, free or connate below in tube, or connate in bundles opposite the petals; anthers didymous or oblong; dehiscence longitudinal, either introrse. *Ovary* free or half. Canute or 8-fid, or rarely 16-fid; ovules many or few on usually a parietal placenta. *Fruit* a loculicidal, 2-5-lobed, bearing the seeds in the centre.

Z2^TfL^y0/or

bearing the seeds in the centre.

^ .UutshorrTh^ Kurer^ ^ ^ " * * "

- Petals absent 5 flowers in axillary fascicles.....Casearia.
- Petals Present; flowers in axillary and terminal racemes.....Homahum.

354. Casearia Jacq.

Shrubs or small trees; have 8 simple > alternate, distichous, petioled, entire or slightly serrate, minutely linear-punctate beneath; stipules small, lateral, caducous. Flowers small, greenish-yellow, axillary, fascicled; pedicels short, jointed; bracts scale-like > numerous. Sepals 4-5, connate below, imbricate, obtuse, persistent. Petals 0. Stamens 8-10, connate below in a gynous, sometimes very short, tube; filaments free above with alternating staminodes. Carpels 3, or sometimes 2, connate in a Me, ovoid, 1-celled ovary; ovules many, placentas parietal; styl* kple; stigma capitate or 8-fid. Fruit succulent, globose or ovoid or ellipsoid, smooth or 3-angled or 6-ribbed, opening by 3, rarely 4, valves. Seeds many > angular or obovoid, with a fleshy arillus; embryo straight.

Adult leaves and petioles glabrous beneath.....graveolen*.
 Adult leaves, at least on the midrib and petioles, more or less pubescent beneath.—

W e s oblong, closely serrate, softly hairy beneath.....Vareca.
 ^ v e s elliptic-oblong to lanceolate, crenate, pubescent, or glabrous ex<*pt midrib and petiole, beneath.....tomentonn.

848. C^SEARIA OBAVKO LBN8 Dalz.; F B. I. ii. 592; E. D. C. 722.
 Behar; Chota Nagpur.

A shrub or small tree. Hind. Chilla, pimpri; Kol. lian;
 •Santal. Neuri.

849. CASEARIA VARECA Roxb.; F. I. ii. 418; F. B. I. H 593.
 Tippera; Chittagong.

A shrub. T .. rOtt .

850. (USEARIA TOMRHTOBA Roxb.; P. I. "• 421 ; F. B. 1.11. ^ ,
 E. D. c. 725.

In all the provinces. -7 -0 '
 A shrub or small tree. Hindi Chilla, baira ; Kol. wore,
 Santal. Chorcho ; Uriya Girari.

355. Homalium Jacq.

Shrubs or trees ; leaves simple, alternate, entire or subentire,
 Petioled or sessile, rarely punctulate. Flowers small, pubescent,
 21

in slender axillary and subterminal racemes or panicles; base of pedicels often prominent, caducous. *Petal*s 5-7, connate in a funnel-shaped calyx-tube, adnate to base of calyx, narrow, persistent. *Petal*s 4-8, inserted in the calyx, linear-oblong, persistent. *Stamens* 4-5, in fascicles of 2 or more (in our only species in fascicles site the petals with alternating glandular stamens 2-5, connate in a half-superior, 1-celled ovary; many; placentas parietal, confined to the portion of the calyx; styles 2-5, filiform; stigmas capitate. coriaceous, half-superior capsule, opening at the top. *Seeds* few, angular or oblong.

851. HOMAUM SCHLICHII Kurz; F. B. I. ii- 97.

Chittagong.

A tree.

Order LIX. TURNERACEAE.

Herbs or shrubs. *Leaves* alternate, entire or pinnately serrate, often 2-glandular at the base; stipules few, rarely large. *Flowers* regular, hermaphrodite, axillary solitary, or racemose; peduncles free or adnate to petiole, often usually 2-bracteolate. *Disk* lining calyx-tube. *Sepals* 5, inserted in throat of calyx-tube, clawed, membranous, sometimes with a fimbriate scale. *Stamens* 5, in calyx-tube, rarely hypogynous; filaments free; anthers dehiscence longitudinal, introrse. *Ovary* free, ovoid or 1-locular; styles 3, terminal, filiform, simple or 2-fid, flabellate, multifid, rarely merely dilated; ovules anatropous, 2-seriate on 3 parietal placentas. *Fruit* a capsule, 3-valved at the top or throughout; valves bearing the seeds along their centre. *Seeds* oblong, cylindrical, with a membranous arillus, and firm, pitted testa; albumen embryo cylindrical, axial.

356. Turnera Linn.

Herbs, undershrubs or shrubs; *leaves* alternate, simple, serrate or pinnately lobed, usually 2-glandular at base; stipules small or 0. *Flowers* axillary, solitary, rarely fascicled racemes, yellow, peduncle sometimes adnate to petiole;

teoles 2 or 0* *Sepals* 5, connate in a canipanulate or narrow calyx-tube of limb oblong or linear > imbricate. *Petals* 5, the **5** or sometimes <3^{uite} hypogynous; filaments free, flattened; anthers oblong. *Carpels* 3, connate in a free, sessile, oblong ovary; ovules many, 2-seriate on 3 parietal placenta; style 3, **3** free or occasionally connate at the base; stigma 3-5- or more-fid. *Fruit* an ovoid or oblong, many-seeded or rarely 3-seeded capsule, opening completely by 3 valves. *Stems* confined to centre of placentas, oblong or cylindrical, branched, a membranous arillus; albumen fleshy; embryo axillary.

52. TURNERA ULMIFOLIA Linn.

In most of the provinces; an escape from gardens.
An under shrub.

Order LX. PASSIFLOREJE.

Herbs or shrubs, almost always twining or climbing. *Leaves* alternate, simple or lobed, penninerved or palminerved, often bluish-green beneath; petiole often glandular; stipules 2, deciduous or persistent, sometimes 0; tendrils axillary or 0. *Flowers* regular, hermaphrodite or 1-sexual; usually 3-bracteolate, with bracteoles small and scattered or large and forming a leafy epicalyx, rarely 0; axillary cymose, with sometimes one or more of the branchlets transformed as a tendril, rarely flowers solitary. *Disk* urceolate, annular or split into staminode-like glands, rarely 0. *Sepals* 5, connate in a calyx with tubular base, fleshy or subcoriaceous, less often membranous, imbricate. *Petals* 0, or 5 attached to calyx-tube, membranous or fleshy, imbricate, marcescent; corona above the disk usually present. *Stamens* 5, adnate to a gynophore or free at the base, perigynous; anthers oblong, basifixed or versatile; dehiscence longitudinal, lateral or introrse. *Ovary* superior, usually on a gynophore, sometimes subsessile > 1-locular with 3 parietal placentas, in flowers rudimentary absent; styles X or 3; stigmas reniform, capitate or flattened; ovules numerous, anatropous, pendulous. *Fruit* a berry or capsule. *Seeds* many, ovoid or flattened, with a fleshy arillus; albumen often pitted; albumen fleshy, rarely scanty; embryo axillary, with usually leafy cotyledons.

[Passiflora.

Flowers hermaphrodite ; corona of corolla conspicuous , herbs.....

* ivil-be>ridg Passiflor^{a#}

Flowers unisexual; corona of corolla small or none:--

Male and female corollas similar ; tendril-bearing herbs 01

shrubs Modecca.

Male and female corollas dissimilar ; erect trees with soft s ei

t us Carica.

357. Passiflora Linn.

Twining shrubs, with usually lateral, simple ten simple or palmately lobed, usually with glands on u and petiole; stipules slender or leafy. Floivers cymose; bracteoles 3, alternate. Sepals 5, conn calyx-tube; lobes of limb linear. Petals 5, f throat; with corona of slender filaments within springing from throat of calyx and from one or moie folds lower down, and with a basilar, membranous cup ing the base of a distinct gynandrophore. Stamens from apex of gynandrophore; filaments flat; an dorsifixed. Carpels 3, connate in a one-celled ovar, the gynandrophore; ovules numerous ; styles 3; stigi capitate. Fruit a fleshy berry. Seeds many, rarely

leaves

solitary or

calyx-

corolla,

branous

surround-

arising

oblong,

or

forming an

with the

dis-

angularis.

Flowers small, without petals; bracts none, or if present no involucre under the flower.....

Flowers large, showy ; bracts 3, forming an involucre un flowers:—

Leaflets of the involucre finely pinnatifid, the ultimate se sec ted, setaceous

Leaflets of the involucre entire or toothed :—

Branches terete; stipules large, foliaceous.....

Branches quadrangular, faintly winged along the cornel

adihi phytt

angularis.

853. PASSIFLORA SUBEROSA Linn. ; F. B. I. ii. 599.

C. and E. Bengal; Sundribuns ; Chittagong.

A herb climbing in hedges and thickets ; a

America, but quite naturalised.

tive of

1854. PASSIFLORA FCETIDA Linn. ; F. B. I. ii. 599.

C. Bengal; Chittagong.

A climbing slender shrub in hedges near villag native of America, but fairly naturalised.

g. e>

855 - PASSIFLORA ADENOPHYLLA Mast.

N. Bengal, naturalised.

A garden escape.

856 - PASSIFLORA QUADRANGULARIS Linn.

N. Bengal, naturalised.

A garden escape.

358. Modecca Lamk.

^{Tvvil} Climbing herbs or undershrubs, with simple lateral tendrils; ^{eave8} leaves entire or palmately lobed, usually with 2 or more flat, ^{c>} circular glands on the under-surface, and with similar glands at ^{ityex} junction of petiole; stipules inconspicuous or 0. *Flowers* monoecious, ^{ll few} or many-flowered axillary cymes, the peduncles long, one ^{Or} more being sterile and converted into tendrils. 3 ? *Sepals* 5, connate in a tubular or campanulate calyx-tube; lobes of limb ^{mbri} imbricate, coriaceous. *Petals* 5, free, membranous, 1-nerved, [^] inserted on calyx-tube, those of ? rather smaller. *Corona* 0 or ^{*~~ex~~*} reduced to a fimbriate ring. *Stamens* 5, inserted at base of ^{^al} calyx-tube, opposite as many scales or glands; filaments linear, ^{ub} tubulate, connate below or quite free; anthers basifixed, the ^{^ctive} connective often mucronate: rudimentary *ovary* very small or 0. *Staminiodes* 5, connate below in a cup round base of ovary, ^o opposite as many ligulate, capitate glands. *Carpels* 3, connate in ^a a globose or elliptic, sessile or stalked, round or angled, 1-celled ^o ovary; ovules many on parietal placentas; style cylindrical, short, ^{o*} 3 stigmas 3, capitate or flattened and dilated. *Fruit* a fleshy [^] coriaceous, 3-valved capsule. *Seeds* many, ovate, compressed, ^{ari} arilate, with long funicles; albumen fleshy.

7. MODECCA TRILOBATA Roxb.; F. I. iii. 133; F. B. I. 602.

Chittagong.

A large climber. Vernac. Akand-phul.

359. Carica Linn.

^j Trees or shrubs, with spongy stems and milky juice; *leaves* ^{ar} large, flaccid, long-petioled, palmately lobed, subpeltate; stipules ^{o*} 0. *Flowers* whitish, dioecious, the male laxly panicled, the female ^{fasci} fascicled. *Sepals* 5, connate in a small, campanulate calyx. - 3 ^{Peta} *Petals* 5, connate in a salver-shaped corolla with elongated, slender ^{tube} tube; lobes oblong or linear, valvate or contorted. *Stamens* [^] 10, ^{inserted} inserted on the corolla-throat; anthers 2-seriate, adnate; 5 on

short filaments, alternate with corolla-lobes, 5 sessile
 corolla-lobes; dehiscence introrse, connective
Ovary reduced to a subulate process. ? *Petals*
 oblong, erect, deciduous. *Stamens* 0. *Carpels*
 sessile, 1-celled ovary; ovules many, several
 placentas; style short or 0, stigmas 5, linear
 or lobed. *Fruit* a large, fleshy, somewhat furrowed
 berry. *Seeds* ovoid, with an adnate arillus; albumen

858. CARICA PAPAYA Linn.; F. I. iii. 824; F. B. I. C. 581.

Generally cultivated and often spontaneous
 An erect small tree; native of America. Vern
 (from the American name). The Papaw.

Order LXI. CUCURBITACEAE.

Herbs or shrubs, climbing by means of solitary
 simple or divided tendrils. *Leaves* alternate, petiole
 date, simple, lobed or pedately divided; stipules
Flowers regular, 1-sexual, monoecious or dioecious, usually
 rarely racemose or subumbellate, often solitary, usually
 white. *Disk* 0. *Sepals* united in a calyx, with tube
 quite adnate to ovary; limb rotate, campanulate, or
 5, rarely 3, imbricate. *Petals* 5, inserted on the calyx
 in a tube or almost or quite free, sometimes fimbriate
 valvate or involute in bud. *Stamens* inserted at the
 the middle or at base of calyx-tube, usually 3,
 anthers free or connate in a tube, usually one
 2-celled, cells straight or flexuous or conduplicate, the
 sometimes produced; dehiscence longitudinal or in
 ing folds of anther-cells, extrorse. *Ovary* inferior,
 superior, usually of 3 connate carpels, normally 1-locular,
 stigmas 3, more rarely styles 2 or 3 or 4; ovules usually
 horizontal, rarely pendulous, sometimes few, pendulous,
 2-seriate on 3 vertical, parietal, or partially or completely
 placentas, which render the ovary occasionally spuriously
Fruit usually a gourd or berry, indehiscent or opening by
 or by a stopple, usually 1-celled, less often spuriously 3-celled
 seeds embedded in pulp or fibre. *Seeds* usually many, often

prewed, horizontal, or pendulous; testa often with corrugate or **spi**nose margins; albumen 0; embryo with leafy cotyledons.

An**thers 2-celled; ovules horizontal or very rarely pendulous; female **flo** usually solitary, never panicled; leaves never divided into dis- **tr***t leaflets :- [p. 516]

tAnther-cells folded together or sigmoidly curved:—[p- 516].

Corolla rotate, or, if campanulate, divided almost or quite to me base into 5 free petals :—

Petals fimbriate at their margins:—

Ovules 12, perfect seeds usually 6, each with an abortive seed attached to its side; tube of calyx 3 in. long or ^{1 0 n} S [^] **gsoni** [^]

Ovules almost pendulous and seeds very numerous; tube of calyx less than 3 in. long.....**Trichos** **anthes.**

Petals with entire margins:—

Calyx-tube of male flowers elongated; stamens inserted within and included in the calyx-tube; anthers cohering in an omong head:—

Tendrils simple; stigmatic lobes of the female flower linear, simple; petiole without glands.....**Gymnopetalum.**

Tendrils divided; stigmatic lobes of the female flower 2-lobed; petiole with 2 glands at its apex. . . . **Lagenana.**

Calyx-tube of male flowers short:—

Stamens inserted at the mouth of the calyx; filaments exerted, recurved; anthers free:—

Fruit dry; endocarp fibrous, opening by a stopple [^] **maie** **ufa.**
flowers partly in racemes.....*i

Fruit **sof**; endocarp **pl** **shy**, indehiseent; [^] **J** **incasa.**
flowers alike solitary.....*i **laments**

Stamens inserted below the mouth of the calyx, [^] **less co**
hardly exerted, not recurved; anthers more 01

erent :—

***s** with 2-3 scales at its base; male flowers with usually a large enveloping bract; tendrils [^] **1** [^]

Calyx without scales at its base; male flowers with no enveloping bract:—

Connective produced beyond anther-cells; ten **drils simple** **Cucumis.**

Connective not produced; tendrils 2-3-ficl.....**Cl** **trullus.**

Corolla campanulate, not divided much more than nan-* < j **down** :—

[Hodgsonia.

Flowers white; tendrils simple..... **Cephalandra.**
 Flowers yellow; tendrils 2-3-cleft **rbita.**
 Anther-cells straight, or, if curved (*Bryonia*), not con **AM** *e nor
 sigmoid:-[p. 515]

Flowers large, deep-yellow ; male racemes stout **Thladiantha.**
 Flowers small, pale-yellow; male pedicels or racemes slender.
 Male and female pedicels alike 1-flowered, clustered:—

Tendrils simple..... **Mukia.**
 Tendrils 2-fid..... **B** [^] **Z** ^{!!!} **ZZZZ** ^{5ft.} **T** *

Male flowers in corymbs, umbels, or racemes :-
 Connective produced; fruits on capillary pedicels ; m** flowers
 usually racemed..... **Melothria.**
 Connective not produced; fruits on short pedicels; male flowers
 usually corymbose or subumbellate..... **Zehneria.**

* Anthers 1-celled, cells straight; stamens always free; ovules ^{ways} **L** * ^{red}
 pendulous; flowers small, the female ones in panicles or many-fl ^o *e
 racemes:—[p. 515]

Leaves not divided into separate leaflets **Actinostemma.**
 Leaves pedately divided into 3-5 leaflets **Gynostemma.**

360. Hodgsonia Hook. f. & Thorns.

A large climber; leaves coriaceous, palmately lobed, 1*J
 Petioled; tendrils 2-3-fid. Flowers large, dicecious; mal* 5
 long racemes; bracts oblong, entire; female solitary. ^{bes}
 connate in ^{1^} ^{X.1.} a long tube, with shortly campanulate mouth; ^V [>]
 short. Petals 5, connate at the base only, margins very n
 umbinate. Stamens 3, with very short filaments; an.
 connate, exserted, two 2-celled, one 1-celled, cells condupHi*
 Carpels 8, connate in a globose, 1-celled ovary; placenta
 parietal, but only near base, each 2-seriately 4-ovuled; styk
 stigmas 3, oblong, bifid, exserted. Fruit a large, depress
 S [^] ⁿ ^Z ^o ^o ^v ^e ^d ^h ^a ^r ^d ^b ^e ^r ^r ^y ⁻ ⁸ [^] [»] ^T ^M ^{*} ^y ⁶ [,] ^p ^e ^r ^f ^e ^c ^t [>] ^j ^l ^a ^t
 laterally attached. ^{veins} ^{each} ^{with} ^{usually} ^{an} ^{imperf} ^{*} ⁱ

89. H ^ O B ^ H ook. f. & Thoms.; r. B. I. ii. 606.

T¹ *heteroclita* F. . iii. 705.
Chittagong.

An enormous climber ^{stein} sometimes 100 feet long.
Vernac. Gulur.

361. Trichosanthes Linn.

Herbaceous climbers; leaves entire or palmately lobed, denticulate; tendrils usually 2-5-fid. K « « denticulous, less. « « ^ »oneous, white; male peduncles usually in axillary panicle, small; female, the other 1-flowered, caducous; bracts large or small; flowers solitary. Sepal* 5, connate. Petal* 5, of limb lanceolate, entire or serrate or cordate. Stamens 3: innate at the base, margins long-fimbriate. * Dioica. Anthers narrow-linear, subincluded, connate, rarely free. two 2-celled, one 1-celled, cells conduplicate. » ovules innate in an inferior 1-celled ovary at base of calyx-tube, usually, horizontal, on 3 parietal placentas; style filiform; stigma free. » P« 3-fid or 6-fid. Fruit a lanceolate or globose, smooth, acute or obtuse berry. Seeds many, horizontal, embedded in pericarp. ellipsoid; margins sometimes angled.

B. Bracts of the male flowers small or none:—
 Leaves, cordate-oblong, acute, sinuate-dentate, but not angled, harsh; anthers in male flowers free; both male peduncles 1-flowered. angled, leaves subreniform-cordate, usually 5-, sometimes 3-7-lobed; earlier pubescent; anthers in male flowers connate, later one male peduncle (sometimes replaced by a female) 1-flowered, racemed. —
 Fruit ovoid-cylindrical, sometimes contorted. warty.
Bracts of the male flowers large, wide-based, and (absent) 1-flowered. the other racemed; margin of bracts ovate or obovate, lacerate or deeply serrate; leaves palmately cut into 5, sometimes 3 or 7, broad or (rarely) narrow lobes, usually only 1-angled or almost entire, always glabrous beneath. leaves cordate-ovate. Bracts usually obovate, entire or faintly serrate; cordate. * (occasionally) faintly angled, always hairy beneath.

860. TRICHOSANTHES DIOICA Roxb.; F. I. iii. 701; F. B. I. 609. E. D. T. 586.

In all the provinces. Patol;
 A rather extensive climber. Hind. Palwal; B«V- ^
 Uriya Fatal.

m

BENGAL PLANTS.

[Trichosanthes.

861. TRICHOSANTHES CUCUMBRINA Linn.; F. I. # 702; F. I. ii. 609; E. D. T. 576.

In all the provinces; sometimes cultivated. A considerable climber. Beng. Ban-chichinga 5 Jangli chachinda.

662. TRICHOSANTHES ANGUINA Linn.; F. I. iii- 701; F. I. ii. 610; E. D. T. 569.

Cultivated fairly generally. A considerable climber. Hind. Chachinda; Beng. chinga; Uriya Chichendara.

663. TRICHOSANTHES PALMATA Eoxb.; F. I. ii. 704; F. I. ii. 606; E. D. T. 600.

In all the provinces. A large climber, stems often 30 feet long. indrayan; Beng. Makal.

664. TRICHOSANTHES CORDATA Roxb.; F. I. Hi- 703; F. I. ii. 608; E. D. T. 573.

N. Bengal; E. Bengal. An extensive climber. Beng. Bhoi-kamra.

362. Gymnopetalum Am.

Herbaceous climbers; leaves petioled, 5-angled, or 5-lobed; tendrils usually simple or 2-fid. Flowers large, dioecious or occasionally monoecious; male peduncle fully developed individuals 2 from each axil, the earlier later long racemose, one or other often suppressed; racemed flowers large, incised, or small lanceolate; female solitary, usually in separate axils if not on separate Sepals 5, connate in a long calyx-tube, contracted under the lobes lanceolate. Petals 5, margins not fimbriate. anthers included, connate, elongate, one 1-celled, two 2-celled; conduplicate. Ovary represented by 1 or 3 small linear ? Carols 3, connate in an oblong, 1-celled ovary; Wontal, on 3 long vertical placentas; style long; stigmas short. Fruit an ovate-oblong berry with acute tip. Zipped, compressed.

865. GYMNOPETALUM COCHINCHINENSE Kurz; F. B. I. & 611.

Momohca tubiflora F. II i iii 7n. In most of the provinces. A rather slender climber.

363. *Lagenaria* Ser.

Large climbing herbs; *leaves* ovate or orbicular, cordate, dentate; *Petiole* long, with 2 glands near its apex; tendrils 2-fid. **Flowers** large, white, solitary, monoecious or dioecious; males with long, females with short peduncles. *Sepals* 5, connate in a funnel-shaped *corolla* subcampanulate tube; lobes of limb narrow. *Petals* 5, obovate, free. *c?* *Stamens* 3; anthers connate, included, one 1-celled, two 2-celled, cells conduplicate. *? Carpels* 3, connate in an oblong, 1-celled ovary; ovules many, horizontal, on 3 vertical placentas; style short, with three 2-fid, stigmatic lobes. *Fruit* a large, thickly coriaceous or almost woody polymorphous berry, usually broader upwards. *Seeds* numerous, horizontal, smooth with marginal *areolae*.

866. *LAGENARIA VULGARIS* Ser.; F. B. I. ii. 613; E. D. L. 30.

Cucurbita Lagenaria F. I. iii. 718.

Cultivated generally.

A large climber. *Vernac.* Kaddu, kodu.

364. *Luffa* Cav.

Large or small climbers; *leaves* cordate, usually 5-angled or 5-lobed; *petiole* not glandular at apex; tendrils 2-5-fid. *Flowers* monoecious, yellow or white; males on long or short racemes or axillary; *female* flowers solitary or paniced, both sexes often from same *axils*. *Sepals* 5, connate in a turbinate tube, which in *? flowers* is *protruded* beyond the ovary; lobes triangular or lanceolate, *connate*. *Stamens* 3, less often 5; filaments free or *connate*; anthers exerted, free, one 1-celled, two 2-celled, or all 1-celled; cells sigmoid, often on the margin of the broad connective. *? Carpels* 3, connate in an oblong, 1-celled ovary; ovules many, horizontal, on 3 parietal placentas; style cylindrical; stigmatic *lobes* 3. *Fruit* a large or small, oblong, smooth or angled or *spinose* or *fibrous* berry, usually dehiscent by a circumscissile opening *at the apex*. *Seeds* many, oblong, compressed.

Male flowers with 5 stamens:—[p. 520]

Male pedicels axillary, clustered, without bracts; fruit small, 2 in. long, oblong, covered with papillae, obscurely 10-striate. *... < ravelens.*

Male Pedicels racemed on long peduncles, each with usually a small, *ovate*, viscid bract; fruit large, clavate, 5-12 in. long, smooth, distinctly 10-angled or 10-ribbed. *... cepytiaca.*

- Male flowers with only 3 stamens: —
 Fruit medium, 3-4 in. long, 10-angled for 10-ribbed; endocarp bland, edible; leaves green
 Fruit oblong, 10-ribbed; endocarp when cooked acrid, emetic; leaves pale beneath
 Fruit small, under 1-5 in. long, obovate, densely bristly

867. LUFFA GRAVEOLENS Roxb.; F. I. iii. 716; F. B. i. 569. ii. 614-
 N. Bengal; E. Bengal; Behar; Chota Nagpur.
 A climber.
868. LUFFA AEGYPTIACA Mill.; F. B. I. ii. 614; B. J. i. 714. L. pentandra F. I. iii. 712. L. clavata F. I. i. 715. L. racemosa F. I. iii. 715.
 Generally cultivated, but also as if wild in raos of the Princes.
 A very large climber. Hind. Ghia-taroi; Beng. »
869. LUFFA ACUTANGULA Roxb.; F. I. iii. 713; F. B. I. i. 563. E. D. L. 556.
 Generally cultivated, but also as if wild in E. Bengal.
 An extensive little-branched climber. Hind. Taroi; Beng. Jhinga.
870. LUFFA AMARA Roxfajit. H. 715. L. acutangula var. amara F. B. I. ii. 563. D. L. 563.
 Chota Nagpur; Ori. A
 A rather extensive little-branched climber. Hind. Karui-taroi; Beng. Tita-jhinga.
871. LUFFA ECHINATA Roxb.; F. I. iii. 716; F. B. I. i. 574; E. p. L. 574.
 N. and E. Bengal; Tirhut.
 A small climber. Vernac. Bindaal.

365. Benincasa Savi.

A large, softly hairy climber; leaves cordate, reniform, orbiculate, more or less 5-lobed; petiole without glands. Flowers yellow, monoecious, all solitary; bracts 0. Sepals 5, connate in a campanulate tube below, free, leaf-like, and serrate above. Petals 5, slightly connate at the base, obovate. * Stamens 3, inserted near mouth of calyx-tube; anthers exerted, one 1-lobed.

ovary; ovules numerous, horizontal, on 3
Fruit a large, fleshy, oblong, pubescent, inde-
many, oblong, compressed, margined.

- DENINCASA CERIFERA Savi; F. B. L.ii. 616; E. D. B. 430.
"curbita Pepo F. I. iii. 718.

Cultivated generally.
A large climber. Beng. Chal-kamra ; Hind. Gol-kaddu.

366. Momordica Linn.

climbers ; leaves cordate, entire, petioled ; tendrils
flowers yellow or white, monoecious or dioecious; males
bracts large, small, or 0; females peduncled,
lobes ovate* Petals 5, shortly connate below. cT Stamens 3,
anthers ultimately free, one 1-celled,
conduplicate or rarely horseshoe-
Carpels 3, connate in an oblong, 1-celled ovary;
horizontal, on 3 vertical placentas; style long,
it an oblong or spherical, smooth or rough, many-
or 3-valved capsule. Seeds obovate or
smooth, corrugated, or sculptured.

near middle of slender male peduncle ; fruit
tubercles.....Charantia.
bracts large near to P of male peduncle and embracing the

5 fruit densely covered with soft spines; seeds -25 in.
white; fruit muricated ; seeds 1 in. long....vochinchineHKi*.

878> MOMORDICA CHARANTIA Linn.; F. I. iii. 707 ; F. B. I. ii. 616;
E. D. M. 626. M. muricata F. I. ii. 707.
In, all the provinces ; cultivated and as if wild in village
shrubberies.

A slender climber. Vernac. Karéla.
874t MOMORDICA DIOICA Roxb.; F. I. iii. 709; F. B. I. ii. 617;
E. D. M. 639.
In all the provinces.
A climber. SantaL Kanchan-arnk'.

875. MOMORDICA COCHINCHINENSIS Spreng.; F. B. I. h< ^{Site}
E. D. M. 634. *M. mixta* F. I. iii. 709.

C. and E. Bengal; Chittagong.

A large climber. Vernac. Kakrol, gol-kakra.

367. Cucumis Linn.

Herbaceous, hispid or scabrous herbs; leaves pet****. ^{ai} _{le.}
mately lobed or entire, dentate or serrate; tendrils B»»P ^{the}
Flowers yellow, monoecious, all short-peduncled, axillary; ^{ur-}
males fascicled, the females solitary. Sepals 5, connate in • * ^{ate}
W t e or campanulate calyx-tube; lobes small. Petals 5. ^{conBate}
below in a campanulate tube; lobes oblong or ovate, acufe'.
Stamens 3; anthers free, one 1-celled, two 2-celled; cells fle*»^{ose}
or conduplicate, connective crested. ? CWpfc 3, connate m ^{an}
ovoid ovary; ovules many, horizontal, on 3 vertical P****T<< ^{ts;}
style short; stigmas 3, obtuse. Fruit a large or small. sp ^{heric}
or elongated, smooth or tuberculate berry. Seeds very •»» ^{n''}
oblong, compressed, usually smooth.

Leaves more or less harshly scabrid; fruit not tuberculate :-

Leaves usually rather deeply 5-lobed, sometimes hardly s W e ³ ^{''} ^V
with soft hairs; fruit faintly „, decidedly 3-sided, usually' i*''*''
lu-stnped, ellipsoid; root capable of persisting for more than a seft ^{son;}
not cultivated, fruit very rarely eaten ! ^{m9o, ms.}

Leaves faintly 5-lobed, or if deeply lobed the lobes not acute, sol ^{al.}
hairy as well as scabrid; fruit not at all 3-sided, variously^!''''0',
ovoid, elongated, or contorted; root annual; always cultivated ^{fruit}

Leaves hispidulous, "and" sometimes' also" softly hairy"but'not scabrid.
5-angulär or slightly 5-lobed, the lobes acute; fruit almost always cy ^{it}
due, family murieulate; root annual; always cultivated. ^{sat, ms.}

876. Cwnmi8 TBKKT0B Boxb.; F. I. iii. 722; F. B. I. << ^{619>}
E V D C 2298. *O. tzerbinatus* F. I. iii. 723.

In most of the provinces.

An annual or perennial climber or creeper; not cultivated.

Sometimes considered the original source of the Melon, it may equally
probably be a form of that plant which has become feral after escape.

877. C ^ j , MBLO Linn.; F. L m 720; F. B. L. . 620. E; P.

C. utilisimus F. I. iii. 721.

Cultivated in all the prov:inces.

An annual climber or creeper. *Vernac.* Karbuz (the Sweet); Kakri (the Vegetable). The Melon.

878. CUCUMIS SATIVUS Linn.; F. I. iii. 720; F. B. I. u. 620, E. D. c. 2287.

Cultivated in some of the provinces.

An annual climber or creeper. *Hind.* Khira; *Beng.* basa, *Calcutta*; *Thryon* Kakri.

368. Citrullus Schrad.

Herbaceous climbers, hispid or scabrous; *leaves* petioled, palmately lobed, with usually narrow, sinuate-pinnatifid segments, sometimes lobes small; tendrils 2-3-fid. *Flowers* moncecious, all solitary, rather large. *Sepals* 5, connate in a campanulate calyx-tube*. *Petals* 5, connate half-way up in a campanulate corolla. *Hh* ovate-obtuse lobes. * *Stamens* 3; anthers scarcely connate, *» 1-celled, two 2-celled; cells conduplicate, connective not produced*. ? *Carpels* 3, connate in an ovoid, 1-celled ovary; ovules many, horizontal, on 3 vertical placentas; style short; stigmas distinct. *Fruit* a large, globose or ellipsoid, smooth, fleshy berry. *Seeds* many, oblong, compressed, smooth.

879. CITRULLUS VULGARIS Schrad.; F. B. I. ii. 621; E. D. C. 1221.

Cucurbita Citrullus F. I. iii. 719.

Cultivated throughout our area.

An annual creeper or climber. *Vernac.* Tarbuz. The Water-Melon.

369. Cephalandra Schrad.

Herbaceous climbers; *leaves* petioled, palmately lobed or angled, to 3-lobed; tendrils simple. *Flowers* dioecious, rather large, solitary, 5-lobed; bracts 0. *Sepals* 5, connate in a short campanulate tube; lobes obtuse or subulate. *Petals* 5, connate in a campanulate corolla; lobes short, acute. ? *Stamens* 3; anthers exerted, connate, or 1-celled, two 2-celled; cells conduplicate. ? *Carpels* distinct, innate in an oblong ovary; ovules many, horizontal, on 3 vertical placentas; style long; stigmas 3, bifid. *Fruit* a smooth, fleshy, cylindrical berry. *Seeds* many, ovoid, compressed, margined.

*»- CEPHALANDEA INDICA Naud.; F. B. I. ii. 621; E. D. O. »w.

Momordica monadelphia F. I. iii. 708.

In all the provinces.

A rather extensive climber. *Hind.* Bhimb; *Beng.* Tela kucha, bhimbu.

370. Cucurbita Linn..

Large, climbing, hispid or hairy herbs; *leaves* petioled, cordate, ovate, angled or lobed; tendrils 2-4-lid. *Flowers* monoeious, all solitary, yellow, very large. *Sepals* 5, connate in a calyx-tube; lobes of limb linear or leafy. *Petals* 5, & campanulate corolla; lobes short, triangular. *stamens* 8, inserted deep in the calyx-tube; anthers connate, one 2-celled; cells conduplicate. ? *Carpels* 3, connate in 1-celled ovary; ovules many, horizontal, on 3 vertical placentas; style short; stigmas 3, bifid. *Fruit* a fleshy berry* often large. *Seeds* ovoid or oblong, compressed, margined or not.

Leaf-stalks beset beneath with rigid, pungent hairs; calyx-tube subulate; leaves deeply 5-lobed, with broad sinuses between lobes narrow-subulate; leaves deeply 5-lobed, with broad sinuses between lobes narrow-subulate; leaves very variously lobed.

Leaf-stalks with hairs equal both beneath and above, not pungent:—

Calyx-lobes narrow-subulate; leaves not deeply lobed, Bin uses between the lobes narrow. J/rii<

Calyx-lobes broad-spathulate, leafy; leaves very variously lobed. moschata.

881. CUCURBITA PEPO DC.; F. I. iii. 718; F. B. L. 622; E. D. C. 2331.

Cultivated in our area.

An annual creeper or climber. Beng. & kaddu. The Pumpkin. cP.fed-

882. CUCURBITA MAXIMA Duchesne; F. B. I. 622; E. D. C. 2316.

Cultivated in our area.

An annual creeper or climber. Vernac Mitha-kaddu.

883. CUCURBITA MOSCHATA Duchesne; F. B. I. 622; E. D. C. 2325. C. *Melojiepo* F. I. ii. 719.

Cultivated in our area.

An annual creeper or climber. Bemj. Safral^{IV a}. The Musk-Melon.

371. Thladiantha Junge.

Herbaceous climbers; *leaves* petioled, deep-cordate, 3-lobed, denticulate; tendrils simple, rarely 2-fid. Qn^{litG} or ^s l^{do we}

males monoecious, yellow, small or large; male peduncles in fully developed individuals paired, one. 1-flowered, caducous, without bract, one kernal, with-bracts distinct or obsolete; female peduncle elongated, 1-flowered, bract 0. *Sepals* 5, connate in a shortly campanulate calyx-tube occluded by a horizontal scale; lobes lanceolate. *Petal* 5, connate below in a campanulate tube, upper half of petals free, revolute. *Stamens* 5, four approximated in 2 pairs; filaments free, subulate; anthers straight, narrow, oblong, 1-celled. *Carpels* 3, connate in an oblong ovary; ovules many, horizontal, on 3 vertical placentas; style deeply 3-fid, with 3 reniform stigmas. *Fruit* an ellipsoid, obtuse, green, subcylindric, vertically ribbed berry. *Seeds* many, small, obovoid, compressed, smooth.

884. THLADIANTHA CALCARATA C. B. Clarke. *T. duhia* F. B. I. ii. 631.

E. Bengal; Chittagong.

A large climber.

372. Mukia Arn.

**herbaceous, *scabrid climbers; leaves palmately nerved, cordate, angled but not deeply lobed, petioled and sessile on same individual; tendrils simple. *Flowers* small, yellow, monoecious, in axillary clusters; males short-peduncled, females sessile in same axils. *Sepals* 5, connate in a campanulate calyx; lobes subulate. *Petal* 5, connate in a 5-partite corolla. *Stamens* 3, inserted in the calyx-tube; anthers free, two 2-celled, one 1-celled; filaments straight, connective not produced. *Carpels* 2 or 3, connate in a 1-celled, ovoid, hispid ovary, with an annular disk; ovules few, horizontal, on 2-3 vertical placentas; style thick, its apex with 2-3 stigmatic lobes. *Fruit* a small, globose berry. *Seeds* few, ovoid, compressed, strongly margined.

885. MUKIA SCABRELLA Arn.; F. B. I. ii. 623; E. D. M. 791.

Bryonia scabrella F. I. iii. 724.

*In all the provinces.

A slender scabrid climber. *Vernac.* Bilari.

373. Bryonia Linn.

herbaceous climbers; leaves petioled, palmately lobed or angled; tendrils 2-fid. *Flowers* small, yellowish, monoecious; males and females clustered, short-pedicelled, in same axil. *Sepals* 5, connate in a widely campanulate calyx; lobes of limb small. *Petal* 5, connate in a 5-partite corolla. *Stamens* 3, im-

serted deep in the calyx-tube; antlx

~~2-celled; cells curved or sigmoid, not eoaduplicate, co~~
 produced. ? *Carpels* 3, connate in an ovary;
 ovules many, horizontal, on 3 parietal placentas; style
 3-fid at the apex. *Fruit* a globose berry. *Seeds* rare
 oblong or ovoid, compressed.

886. BRYONIA LACINIOSA Linn.; F. I. iii. 725. 6225
 E. D. B. 904.

In all the provinces.

A slender, nearly glabrous climber,
 Beng. Mala.

374. Melothria Linn.

Herbaceous climbers; leaves deltoid, truncate or hastate
 or 3-lobed, often punctate, petioled; tendrils simple
 flowers small, white, monoecious or, rarely, dioecious,
 females often in the same axil; male pedicels long,
 rarely subsolitary, or racemed on leafless branches;
 pedicelled. *Stamens* 5, connate in a short calyx-tube;
 small. *Petals* 5, connate in a 5-partite corolla,
 inserted in middle of calyx-tube; anthers free, two,
 1-celled; cells straight, simple, sublateral, connective
 ? *Carpels* 3, connate in an oblong, 1-celled ovary;
 horizontal, on 3 vertical placentas; style long; stigma
 globose. *Fruit* a globose or fusiform, somewhat
Seeds numerous, small, oblong, much compressed,
 margined..

Male flowers clustered in the leaf-axils; fruit ellipsoid, pointed
 Male flowers in distant clusters on long racemes; fruit globose,
 rate, obtuse:-

Leaves entire or slightly 3-lobed.....

Leaves deeply cut into long, narrow, divaricate lobes

leucocarpa var.

887. MELOTHRIA INDICA Lour.; F. B. I. ii. 626. *Bryfl****

F. I. iii. 725.

E. Bengal; Chittagong.

A slender climber.

888. MELOTHRIA LEUCOCARPA Cogn. *M. odorata* F. B. I. 626.

E. Bengal.

A climber.

888/2. Var. TRILOBA F. B. I. ii. 626.

E. Bengal.

A climber.

375. Zehneria Endl.

Herbaceous climbers; *leaves* petioled, petioles short or long, lamina polymorphous, toothed, angled, or deeply lobed; tendrils simple. *Flowers* small, yellowish, monoecious or dioecious; males Peduncled corymbs; females short-peduncled, solitary, or less often subcorymbose; bracts small or obsolete. *Sepals* 5, connate in a tubular calyx; lobes of limb small. *Petals* 5, triangular, connate only at the base. *Stamens* 3, inserted deep in the calyx-tube. I filaments glabrous or pubescent; anthers free, all 2-celled, two 2-celled and one 1-celled; cells curved or sigmoid, connate often papillose at top. ? *Carpels* 3, connate in a globose or oblong, glabrous or hairy, 1-celled ovary; ovules many, horizontal, 3 vertical placentas; style cylindric, its base surrounded by an annular disk, its stigmatic apex 3-lobed. *Fruit* a globose, ellipsoid, or cylindric succulent berry.

Petiole longer than the auricles at base of leaf-blade; fruit globose, aciculate, rugose when dry.....*Hookeriana*.

Petiole usually shorter than the auricles; fruit cylindric, not rugose

umbellata.

⁸W- ZEHNERIA HOOKBRIANA Am.; F. B. I. ii. 624.

Chittagong.

A weak climber.

⁸90. ZEHNERIA UMBELLATA Thwaites; F. B. I. ii. **>; E. D. Z. 182. *Momordica umbellata* F. I. iii- ?¹⁰-

In every province.

A climber. *Beng.* Kudari; *Hind.* Tarali; *Santal.* At.

376. Actinostemma Griff.

A weak herbaceous climber; *leaves* petioled, deep-cordate or lanceolate, elongate, much-toothed; tendrils simple and *i-na*. *Flowers* small, monoecious, in lax axillary panicles, mostly male, females few near the base of the peduncle. *Sepals* 5, connate in a small, rotate calyx; lobes linear-lanceolate. *Petals* 5, caudate-ovate, connate at the base. *Stamens* 5, free, their connectives dilated, papillose on one side, with a straight, oblong, sigmoid cell on the other. ? *Carpels* 2, connate in a subglobose,

[Actinostemma.

verrucose, 1-celled ovary; ovules 2 or 4, pendulous; irregularly lobed placental placentas near apex of ovary; style short, reniform. *Fruit* a small, ovoid-cylindrical, covered with rough points, circumscissile above the margin, 2-4, ovate, corrugated and denticulate on the margin.

891. ACTINOSTEMMA TENERUM Griff.; F. B. I. ii-33.

E. Bengal.

A weak climber.

377. Gynostemma Bl.

A herbaceous climber; leaves pedate, segment lanceolate, serrate; tendrils simple. *Flowers* greenish, in diffuse axillary panicles. *Sepals* 5, connate tube; lobes small. *Petals* 5, connate in a rotate corolla, lanceolate. *Stamens* 5; filaments connate 2-celled; cells long, straight. ? *Carpels* 2-3, spherical, 2-3-celled ovary; ovules in each cell 2, styles 2 or 3, connate below, each 2-fid at tip. *Fruit* umbonate, or globose, 1-3-seeded berry. *Seeds* verrucose.

B92. GYNOSTEMMA PEDATUM Bl.; F. B. I. ii-633#

N. Bengal, in the Duars.

A slender climber.

Order LXII. BEGONIACEAE

Herbs or undershrubs, usually succulent; stem or rhizome or corm. *Leaves* alternate, rarely pseudopinnate, more or less inequilateral, lobed or toothed or entire, free, often deciduous. *Flowers* unsymmetrical, 1-sexual, on axillary, dichotomously cymosely divided branchlets and basal bracts usually opposite; generally white, rose or yellow, sometimes small. *Disk* 0. *Sepals* petals forming a 2-seriate perianth; outer segments opposite, valvate; inner segments smaller, usually 2 or 0. *Stamens* numerous, free or connate in one phalanx narrowly obovoid, 2-celled; cells adnate; dehiscence long introrse. ? *Perianth* of 2-6 segments. *Ovary* inferior, 1-locular or 1-locular, usually 3-locular and 3-cornered or placental placental axially simple, or 2-lamellate and intruded into 2-loculars; styles 2-4, free or connate below; stigmas branched.

tor tuOUS; ovules numerous, often covering the whole placental
 SURf ace, anatropous. *Fruit* a loculicidal, rarely septicidal, or
 Regularly rupturing capsule, less often succulent, often winged.
 <<< numerous, minute, globose or narrowly cylindrical; testa
 retl<*late; albumen scanty or 0; embryo obovoid or subcylindnc
 *** minute cotyledons.

378. Begonia Linn.

. Her t>s, rarely shrubs; *leaves* unequal-sided, entire or lobed,
 Regularly toothed. *Flowers* often showy, monoecious. *t*
 Pe nanth of 2 outer sepaloid and 2 inner petaloid segments, rarely
 m<*e, very rarely 0. *Stamens* many; filaments free or monadel-
 . Ph o ^ . ? *Perianth* usually of 5 segments, the 2 outer rather
 !ar &er and sepaloid. *Carpels* usually 3, rarely 2 or 4-5, connate
 In a 2-5-locular ovary; styles usually as many as the ovarian
 Cell*> free or connate at the base, 2-fid at apex, with entire or
 Seised lobes; ovules on axial, rarely on parietal placentas. *<<<*
 U8 ^ lly a 3-cornered or unequally 3-winged capsule, rarely round
 o|' Wangled, sometimes berry-like, 2-5-locular; dehiscence sepi-
 Clid al or loculicidal, partial or complete, occasionally irregular.
 s<*ds many, small.
 C^sule 3-celled, 3-angled, the angles produced into three unequal,
 P^Pery wings, the flat faces ribbed down the middle..... l ncta
 Ca Psule 2-celled, compressed, 3-angled, two angles produced into equal
 na >>'ow >ving< the third into a broader wing..... btuimta.

893. BEGONIA PICTA Sm.; F. B. I. ii. 638.

Chota Nagpur.

A herb.

894. BEGONIA BARBATA Wall.; F. B. I. ii. 646.

Chittagong.

A tall herb.

Order LXIII. DATISCB*.

Trees or herbs. *Leaves* petioled, simple or pinnate; stipules 0.
flowers smaU, dicecious, rarely 2-sexv.al or polygamous, in c lus-
 t(**, racemes, or panicles, s SepaU connate in a small cay. l x
 *ith short tube and 3-9 equal or unequal teeth^ *Petals* a
Stamens 4-more, opposite the calyx-lobes; filaments shox-t, anthers
 ^ U e d ; dehiscence longitudinal, lateral, or extrorse; rud.men

[Tetrameles.

tary ovary 0 or minute. ? *Sepals* connate in a ^{ca} ^Λ ^X ^Λ ^g ^j if ^p ^{*e},
 adnate to ovary; lobes 3-8, short. *Petals* 0. *Stam* ^Λ *Ovary*
 sent, as in <?, more often reduced to staminodes ^{or}
 1-locular, open or closed at the apex; placentas pan
 etal, alter-
 nating with calyx-lobes; styles lateral, as many as
 placentas,
 2-partite or simple; ovules numerous, ascending ^{or} horizontal,
 anatropous. *Fruit* a coriaceous or membranous cap
 sule, opening
 at the apex between the styles. *Seeds* numerous, sma
 ll#, albumen
 scanty; embryo axial, straight, cylindric.

379. Tetrameles B.Br.

A large tree; *leaves* petioled, ovate, more or less pubescent
 beneath. *Flowers* dioecious, appearing before the leaves; males
 paniced; females racemose; clustered near ends of branchlets.
Sepals 4, ovate, connate in a campanulate tube, sometimes
 accessory lobes present. *Petals* 0. *Stamens* 4, opposite the
 calyx-lobes, inserted round a depressed disk, within which is occa-
 sionally a quadrangular rudimentary ovary. *Sepals* 4, connate
 in an ovoid calyx-tube with short lobes. *Petals* 0. *Car* ^P ^{els} 4,
 connate in a 4-lobed ovary with intruded apex; ovules 3-4, seriate
 on 4 parietal placentas; styles 4, short; stigmas simple, sub-
 clavate.
Fruit a small, ovoid, faintly 4-ridged, membranous capsule, open-
 ing at the apex between the styles. *Seeds* minute, numerous,
 flattened, ellipsoid, with a loose, lax, reticulate testa.

895. TETRAMBLES NUDIFLORA R.Br.; F. B. I. ii. 657; ^Λ . p.
 T. 372.

N. Bengal, Duars; Chittagong.

A lofty tree, 100-150 feet high. Vernac. ban
 maina-kát.

du gaza;

Order LXIY. CACTACEÆ.

Herbs, shrubs, or trees, with usually succulent stems, ^{os} ^{ented}
 often thickened, striated or angled. *Leaves* usually rep^r. ^{iles} ^Q ^Λ
 by tufts of spines or by prickles or small tubercles; ^{stl} ^P ^j ^Λ ^a
Flowers regular, hermaphrodite, solitary. *Sepals* unite^d, ^{bri} ^Λ ^Λ
 calyx, with tube adnate to ovary and with 3-many sm ^Λ ^{im} ^{brica}, te.
 lobes. *Petals* many, free or shortly connate below, ^{ina} ^{filr}.
Stamens numerous, free, or adnate to the base of the ^{Vei} ^{QX} ^{*} ^y
 filaments filiform; anthers small, oblong, dehiscing in front. ^{Ova} ^{ry}
 free or embedded in the stem, 1-locular; placentas many, ^P ^{arieta} ^{Vy}.

styl^t terminal, simple, filiform or cylindrical; stigma 2-many-rayed; ovnf⁸ on each placenta, horizontal, anatropous. *Fruit* a j⁸ berry with pulpy placentas. *Seeds* very many, oblong or r^o enif^o 5 albumen scanty, copious, or 0; emb^r y^o straight or curved; cotyledons free or connate.

380. *Opuntia* Mill.

Shrubs with rounded woody base; branches jointed, joints flesh^y flattened, ovate, tubercled, the tubercles hirsute and spiny, the y^o U n g e s t Joints with small, scale-like, deciduous leaflets, *Flo* wer, lateral yellow, or purplish. *Sepals* many, the outermost sealⁿ lateral yellow, or purplish. *Sepals* many, the outermost Hat^e or leaf[^] adna* e to ovary, the inner short, flat, all con- maⁿ a tubular calyx, not produced beyond the ovary. *Petals* n[^] spreading, connate below. *Stamens* very numerous, many- S e r i a - e i figments shorter than petals, free or more or less connate, *Carpel* * Several, connate in a glabrous, exserted ovary; ovules maⁿ y, on parietal Placentas; s[^]le cylindrical, hardly exceeding the stalⁿ ons, Sickened below, hollow above; stigmatic rays thick, erecfc^o Se Vera* # *Fruit* a pear-shaped, umbilicate, tubercled berry. *Seed* ^ s^o ni pressed; testa very hard, albuminous; cotyledons leaf-

8⁹⁶, OPUNTIA DILLENII Haw.; F. B. I. ii. 657; E. D. O. 193.

Cactus indicus F. I. ii. 475.

Behar; W. Bengal; Chota Nagpur; Orissa.

, ^A spiny shrub with flattened, articulated, fleshy stems.

Vernac. Nág-phana.

Order LXV. FICOIDEI E.

Shrubs. *Leaves* simple, often fleshy, usually opposite or W^l 1^o l^o d; stipules scarious or 0. *Flowers* regular, hermaphrodite ^ 1^o l^o d; stipules scarious or 0. *Flowers* regular, hermaphrodite 4^r y P^o y g a m o u s, in cymes or fascicles, rarely solitary. *Sepals* kⁱ jⁱ shortly connate below or almost distinct, occasionally adnate U^s w^o t^o) t b e o v a r y but usually free, often persistent. *Petals* U^a % very small, white, or 0. *Stamens* perigynous or hypo- g y n o u s, definite or indefinite, sometimes accompanied by stami- nod^e s, if as many as sepals opposite to them, if more sometimes conⁿ ate in bundles; ackers oblong, 2-celled; dehiscence longi- tud^U n a l ^ introrse. *Carpels* 2-5, connate, very rarely free, superior, y^e r y rarely inferior; styles as many as carpels, free or connate

Sesuvium.

below; stigmas usually subulate, introrse; ovules ampt>t<>Pf*
either solitary basal, or many axial in each carpel or \^
*W usually capsular, with dehiscence dorsal or circumscissile;
less often of separating, indehiscent cocci, or of free, indehiscent
carpels. Seeds 1-many in each carpel, usually reniform, com-
pressed; albumen mealy, embraced by the curved or annular
embryo.

Calyx-tube elongated ; stamens inserted on the tube ; capsule with debis-
cence circumscissile :—

Ovary and capsule 3-5-celled Scsuvium¹¹

Ovary and capsule 1-2-celled Trianthemfl¹¹

Calyx deeply 5-p_lite ; stamens hypogynousTcapsule wlih dorsal debj*
cence ; ovary and capsule 3-5-celled Moll**⁰

381. *Sesuvium* Linn.

Succulent, branching, prostrate, littoral herbs; leaves opposite
fleshy; stipules 0. Flowers axillary, purplish; bracts 2 or «•
Sepals 5, connate in a ^ ^ yx-tu ^ ; lo ^ rf ^ triangul ^
iceolate, Persistent. Pete ^ Q ^ ^ ^ g or many, insert-
and
3-5 apex of calyx-tube. Carpels 3-5, connate in a super<*>
papill
lose within. » K ^ an ovate-oblong, membranous, 3-5-celled ;
circu
mscissile capsule. Seeds in each cell many, renif<>>>'
embryo annular.

897. SBSUVIUM PORTULACASTKDJ, Linn ; F. I. ii. 509; F-V^h
ii. 659; E. D. s. 1203.

Sundribuns.

A seashore creeping herb.

382. *Trianthema* Linn.

Diffuse, prostrate, branching, glabrous or papillose herbs!
leaves pefoled, opposite, unequal, entire; petioL connected rf
the base ^ membranous dilatations. i i e « small, axillary.
2 ff a ^ s ^ ZW, IP Pedu ^ d e d, or in clusters or small cymes; ^
oitt c uspf : 5 cr 0 C short or long ^ . ^ k : S
top of calyx t, K » i SteTOe>>> .5, 10, or 15, inserted ne
su L L ovaTM ; ^ arpeU ^ " " y - «, 2 connate in a 2-ceUed,
or m ^ t ^
re m eaoh carpel, arising from a basal

Fruit ^{membranous or} coriaceous, clavate, circumscissile capsule.
Seed ^{more, reniform} embryo annular.
 89ft - **TRUNTHEMA MONOGYNUM** Linn.; F. B. I. ii. 660 ; E. D. T. 537.
^{T-} *ohcordata* F. I. ii. 445.
 Chota Nagpur; C. and E. Bengal.
 A diffuse, glabrous herb. Vernac. Gada-bani, labuni.

383. Mollugo Linn.

Br ^g, often dichotomous herbs; **leaves** often falsely
^{or aternate} or radical rosulate, entire, linear to obovate;
^{Caucous} **Ped** ^{ice} **Flowers** small, greenish, axillary, sessile or
^{Set} **Stamens** 3-5, sometimes many, sometimes many,
^{off} **Staminodes** intermixed. **Carpels** 3-5, connate in an
^{void} or ^{obovate} 3-5-celled ovary; ovules many in each cell, axial;
^{6t} **ovules** 3-7 near or small clavate. **Fruit** a membranous, oblong,
^{gjo} **capsule**, sheathed by the calyx; dehiscence
^{locu} **Seeds** several in each cell, rarely solitary, reniform ;
^{Ptv,k} embryo annular.

Inflore ^{in comp} **Compound** terminal cymes ; seeds not appendaged at the
^{leaves} **and stem** glabrous..... *stricta*.
^{SCen<Je} **axillary** clusters ; seeds with an appendage at the

Piall ^{scabrous} Scabrous; flowers pedicelled ; seeds with a short,
^{subulate} **Stell** ^{woolly or hairy} ; flowers sessile ; seeds with a membranous
^{se l} **8** which emits a long, curved bristle.

MOLLUGO STRICTA Linn.; F. B. I. ii. 663; E. D. M. 617.
M. triplujlla F. I. i. 360. **M. pentaphylla** F. I. i. 360.
 in all the provinces.

A suberect herb. *XJriya* Pita-gohun; *Beng.* Khet-
 > papara.

MOLLUGO SPERGULA Linn.; F. B. I. ii. 662. **M. verticillata**
^{P-} J. i- 360. **Pharnaceum Mollugo** F. I. ii. 102.

In all the provinces.
 A diffuse leafy herb.

MOLLUGO HIRTA Thunb.; F. B. I. ii. 662; E. D. M. 615.
Pharnaceum pentagonum F. I. ii. 103.

In all the provinces.
 A prostrate herb.

Order LXVI. UMBELLIFERÆ.

Herbs, rarely shrubs or trees. *Leaves* alternate, usually divided or dissected, sometimes simple; petiole generally sheath[^] at base; stipules 0. *Flowers* regular or irregular, hermaphrodite or polygamous, in compound, rarely simple umbels, the peripheral flowers sometimes ray-like; bracts at base of general and bracteoles at base of secondary umbels involucrely whorled. *Disk* epigynous, distinct from stamens and petals, variously 2-lobed. *Sepals* connate in a tube adnate to ovary; limb 5-toothed. *Petals* 5, epigynous, often unequal, with a median fol[^] on upper side, with the margin often incurved or 2-lobed or reduplicate-valvate in bud. *Stamens* 5, epigynous, anther^s versatile; dehiscence longitudinal, lateral. *Ovary* 1-celled; crowned by the disk; styles 2; stigmas 2, in each cell solitary, pendulous, anatropous. *Fruit* 2-lobed, dorsally or laterally compressed ripe carpels² separated by a commissure; carpels each attached to a pendulous from a slender forked axis (carpophore), with often 3 ridges (1 dorsal, 2 marginal, and 2 intermediate) and often caliculate secondary; pericarp often traversed by oil-canals; *Seed* solitary in each carpel, pendulous; albumen embryonic minute, near hilum.

"Umbels simple; fruit not vittate; leaves simple **Hydrocotyle.**

Umbels compound; fruit usually vittate:—

Leaves simple; flowers yellow; secondary ridges of fruit inconspicuous **Bupleurum.**

Leaves variously compound:—

•Secondary ridges of the fruit inconspicuous:—[P- & *5]

tPrimary ridges of the fruit not winged:—[p- 535]

Fruit laterally compressed, or at least constricted at commissure; ridges of the fruit slender:—

Furrows of the fruit 1-vittate **Carum.**

Furrows of the fruit 2-3-vittate **Xanthoxylum.**

Fruit in cross-section circular, or somewhat dorso-ventrally compressed and widest at the commissure; furrows of fruit **the fruit.**

Flowers yellow; leaves cut into filiform segments; stigmas distinct, 2-partite; calyx-teeth 0 [p. 535]. **the fruit.**

{Flowers white or pink-tinged:—[p. 534]

Lateral primary ridges hardly wider than dorsal; carpophore distinct, 2-partite or not; calyx-teeth 0.....**Seseh.**

Lateral primary ridges thick, triangular, corky, much exceeding dorsal; carpophore 0; calyx-teeth small, acute

CEnanthe.

tPrimary lateral ridges of the fruit excurrent, winged; fruit much dorsally compressed, the wings of the opposing carpels closely applied face to face [p. 534].....**Peucedanum.**

•Secondary ridges of the fruit prominent; fruit subterete, not winged :^[p.534]

^{FTM}its glabrous, secondary ridges broad, very blunt; involucre of bracts none.....**Coriandrum.**

fruits hirsute, secondary ridges bristly; bracts of involucre numerous, pinnate.....^{DaucUS_}

384. Hydrocotyle Linn.

Rostrate herbs, rooting at the nodes ; *leaves* cordate or hastate }^{In Indi} an species), round or angled, subentire or palmately lobed, }
 8-petioled ; stipules small, scarious. *Flowers* white, sometimes }
 1 sexual, in small, simple umbels; bracts small or 0. *Sepals* }
 We connate in a calyx with 5 small teeth or with limb entire. }
^P*etals* 5, entire, valvate or imbricate. *Stamens* 5. *Carpels* 2, }
^c_{om}iate in an inferior ovary. *Fruit* laterally compressed, com- }
 1 ssure narrow; carpels laterally compressed or 5-angled; lateral }
 Primary ridges concealed within the commissure or remote from }
 1 and prominent; vittie 0 or obscure; carpophore 0. *Seed* }
 1 a t e r % compressed.

^f_{ctals} acute, valvate; secondary ridges of fruit 0; pericarp not thickened; }
 leav < * orbicular-cordate, -25-1 in. across..... *rotunthfoUq.* }
^P_{et}*ls obtuse, imbricate; secondary ridges as distinct as primary; pen- }
^{Car}P much thickened ; leaves orbicular-reniform, '5-2-5 in. across }
^{asiatica}

°02. HYDROCOTYLE ROTUNDIFOLIA Roxb.; F. I. ii. 38; F. **B. I.**

. 68.

N.Bengal; C.Bengal.

A prostrate herb.

669;

°03. HYDROCOTYLE ASIATICA Linn.; F. I. ii. 88; F. B. I. u.

E. D. H. 486.

In all the provinces.

A prostrate herb. *Vernac* Brahmamanduki.

[Bupleurum.

385. Bupleurum Linn.

Glabrous herbs or shrubs; *leaves* entire. *Flowers* white, polygamous, the sterile flowers often with enlarged or irregular petals; umbels compound; bracts few, any, entire. *Bracteoles* foliaceous or setaceous or obsolete. *Style* terete. *Petals* 5, obovate, *Stamens* 5. *Carpels* 2, connate in an inferior ovary. *Fruit* subpentagonal, primary ridges distinct, sometimes winged, rarely obscure; secondary 0, or obscure; *Seeds* the primary ridges, rarely 0 or more than three; or 2-fid or 2-partite; disk depressed, rarely *Pr* *in* *U* *ce* # *fruit*.

904. BUPLEURUM MUCRONATUM W. & A.; F. B. I. ii. 676.

Chota Nagpur, Sirguja.

A herb, 7 feet high, with yellow flowers.

386. Carum Linn.

Perennial or annual herbs; *leaves* pinnate or *decom* *pound*. *Flowers* white, polygamous, the sterile flowers often with enlarged or irregular petals; umbels compound; bracts few, any, entire. *Bracteoles* several or to. *Petals* 5, simple or rarely divided; *Sepals* connate in a calyx-tube with teeth small or 0. *Fruit* retuse or emarginate. *Stamens* 5. *Carpels* 2, connate, ovoid, ellipsoid or oblong, laterally compressed and constricted at the commissure; carpels terete, subpentagonal or inner face flattened; primary ridges slender, obsolete, lateral commissural; furrows 1-vittate; carpels or 2-partite. *Seed* terete, subcompressed dorsally, flat or channelled on the inner face. *obscurely*.

Leaves ternately cut; lobes of the lower stem-leaves oblong-linear, fruit hispid; bracteoles 4-8, lanceolate, margins ciliate. *Roxburghianum*. Leaves decomposed; lobes of all the leaves linear-setaceous or *obscurely*. *obscurely*. *obscurely*.

905. CARUM ROXBURGHIANUM Benth.; *F. B. I. ii. 683; E. D.

C. 701. *Apium involucratimi* F. I. ii. 97.

Cultivated in all the provinces.

A field-crop, of herbs 1-3 feet high. *Beng. Chanu, rajani; Hind. Ajmud.*

906. CARUM COPTICUM Benth.; F. B. I. ii. 682; E. D. ii. 691. *Ligusticum Ajouan* F. I. ii. 91.

Cultivated in most of the provinces.
 A field-crop, of herbs 1-3 feet high. *Hind.* Ajouan;
Seng. Jurani.

387. Pimpinella Linn.

Biennial or perennial herbs; leaves once or twice pinnate or ternate, rarely simple and toothed. *flowers* hermaphrodite. **A L C**
 Polygamo-monoecious; umbels compound; bracts few or 0; lvs. linear, sometimes obsolete. *Sepals* connate in a tube with 5 unequal teeth. *Petal** 5, usually «n«g»«£
 acute or lanceolate-caudate. *Stamens* 5. *Ovary** 2; rarely long, rarely very short. *Fruit* laterally composed; constricted at the commissure, ovate, obtuse or oblong; carpels terete or subpentagonal, often dorsally flattened; inner face flattened; ridges slender, obscure or prominent; *tenon* 2-3- very rarely 1-vittate; carpophore entire or 2-partite, sessile; inner face almost or quite flat.

7. *Pimpinella hayneana* Wall.; F. B. I. U- 684. *««*»
infolium F. I. ii. 96.

Chota Kagnur; Chittagong.
 A herb, 2-4 feet high, leaves 1-3 times 3-partite.

388. Foeniculum Adans.

Tall biennial or perennial glabrous herbs; leaves 2-3-4 times ternate the ultimate segments linear or setaceous. *Flowers*, umbels compound; bracts 0; bracteoles 0, or several; connate in a calyx with entire limb. *Petal** 5, emarginate. *Carpels* 2; styles short. *Ovary* oblong or ellipsoid, not compressed laterally, carpels semi-terete; ridges 2; furrows 1-vittate; carpophore 2-partite. *Seed* somewhat compressed dorsally; face slightly concave.

8. *Foeniculum vulgare* Gaertn.; F. B. I. a. 695; E. D. F. boy.
panmorium F. I. ii- 94*

Occasionally cultivated in the western provinces.
 A tall glabrous herb. *Hind.* Saunf; *Beng.* Pan-mohun Fennel.

389. Seseli Linn.

Herbs, glabrous or pubescent; leaves twice or thrice pinnate or bipinnate. *Flowers* white; umbels compound; many; bracteoles several or many. *Sepals* connate.

[Seseli.

a calyx-tube; limb entire or with 5 minute, laiceo^{late} or ^{linear} linear^{or} teeth. *Petals* 5, emarginate. *Stamens* 5. ^{Carpe}late^{late} usually short. .FVz[^] oblong, ovate, or orbicular, [^]te^{<*} compressed, broadest at the commissure; carpels ^s flat[^] occasionally much compressed dorsally; inner iac[^] latera^{h&d} occasionally concave; ridges strong, obtuse or subacute, ^{ent}ent[^] larger than dorsal; vifctas solitary, usually P^{rom}re; disk ^oot furrow ; carpophore 2-partite or 2-fid, less often e[^]tir[^] on. y dorsally prominent on the fruit. *Seed* semi-terete or occasi^o compressed ; inner face concave.

Lower leaves twice pinnate, secondary pinnae ovate, K[>] [^]te, caudate, ultimate leaf-segments never linear; bracts narrow, lanceo^{.....}indicum. pubescent; fruit usually pubescent to hirsute, subglobose ^{ar} or narrowly Lower leaves often thrice pinnate, ultimate segments hne. fruit globose, lanceolate, glabrous; bracts sometimes pinnate, glabrous, ^{daucifolium.} daucifolium. ^{labrous}labrous

bed, p^{<<}besce^{ei.}

D. s. 1201.

'909. SESBLI INDICUM W. & A.; F. B. I. ii- 693; E-
Ligusticuni diffusum F. I- ii. 92.

In all the provinces.

An annual much-branched herb. Beng* [^]an jowan.

'910. SESELI DAUCIFOLIUM C. B. Clarke; F. B. I. < . 693.

E. Bengal; Chittagong.

An annual erect herb.

390. CE nan the Linn.

Herbs of marshy ground; roots fibrous, creeping or sto/loitt^{u.s.} leaves 1-3-pinnate, ultimate segments large or small, linear^{or} minute, occasionally leaves reduced almost to tn[^]e & hea[^]s. *Flowers* white, often polygamous; male flowers ⁸oixie[^] irregular or enlarged; umbels compound; bracts 0 cpr so^{lita} bracteoles several, linear. *Sepals* connate in a calyx- iw\$ ^{lim} with small, acute teeth. *Petals* 5, emarginate. <SW^{ts} [^]^ [^] *Carpels* 2, connate ; styles short. *Fruit* glabrous, ellipsoid* ^o ^o ^o than broad, or globose, nearly terete ; commissure bro.[^]d; < & rpej[^] semi-terete, dorsally compressed, inner face flattened, later[^] primary ridges large, triangular, corky; dorsal and iintense dia[^] primary ridges smaller or obsolete or all subequal; furrows 1-vit[^] tate; carpophore 0; disk not usually prominent. *Seizd* tere te[^] dorsally compressed, with flattened inner face.

emitting 8; stem long, decumbent, often floating, stolonifera. olons from its base; umbels on very long peduncles

Leaves pinnately decor» pound; stem erect; umbels on very short peduncles or almost sessile..... benghalemis.

911

• ENANTHE STOLONIFERA Wall.; F. B. I. ii. 696. Phellan- *tolonifenim F. I. ii. 93.

C- and E. Bengal.

A herb of wet places» -B^w^ Pan-turasi.

912. CE

ben ENANTHE BENGHALENSIS Benth.; F. B. I. ii. 696. Seseli ghalensis F. I. ii. 94.

N- C. and E. Bengal.

A Wb of ditch-sides and banks of tanks.

391. Peucedanum Linn.

Perennial herbs; leaves 1-3 pinnate or 2-3 times B-partite, ultimate entire. J@&nients lanceolate or ovate, rarely linear, toothed or umbels c om Poun<* with usually many rays; bracts various; bracteoles few or many» sometimes wanting. Sepals connate in a calyx, Wfu or many» STa^N^ are or entire limb. Petals 5, obovate, em'ar- ^*te or J?^fid. Stamens 5. Carpels 2, connate in a glabrous ovfrý. TUL mucn' compressed dorsally, ellipsoid, oblong or or^culaj;. Carpels hardly convex on the back, their margins more or less ut 6^ win^ed» lateral ridges winged, but dorsal and marginal r-v gGS obscure or obsolete; dorsal furrows 1-vittate; margin l-v ttat e or oco occasionally 2-vittate. Seed much compressed dorsally. V ttat e or oco occasionally 2-vittate. Seed much compressed *> ln»er face flat.

Ultimate leaf-segments fi Hform; fruit small, narrowly winged; furrows all l-vitkte. COMmissure 2-vittate..... Soica.

Ult a e i ^a segment's expanded (lanceolate to ovate); fruit large, much compressed V l d i nged :-- Fruit s: V uadrate dorsal furrows 1-vittate, lateral 2-vittate; com- missure 4 5 dorsal furrows 1-vittate, lateral 2-vittate; com- suborbicular ate; leaf-segments oblong, ovate, or (rarely) Fru Dhana.

evitate; Leaf-segments of lower l eaves ovate-acute, of upper linear •nagpurentU.

[i'ucedanum.]

913. PEUCEDANUM SOWA Kurz. *P. graveolens* F. B. I. ii. 709;E. D. p. 460. *Anethuvi Sowa* F. I. ii. 94.

Generally cultivated.

GenS.

A glabrous herb, 1-3 feet high. *Hind.* Sowa;
Salpha, sowa.

914. PEUCEDANUM DHANA Ham.; F. B. I. ii. 709.

N. Bengal; Chota Nagpur.

A glabrous herb, 6 in. to 2 feet high.

915. PEUCEDANUM NAGPURENSIS Prain. *P. glaacum* var. *jmrensis* F. B. I. ii. 710.

Behar; W. Bengal; Chota Nagpur.

A tall herb, 5-7 feet high. *Vernac.* Tej raj.**392. Coriandrum** Linn.

An annual, branched, glabrous herb; *leaves* *te* *Qou* *Λ* *o* *** *n*
Flowers white or purple, the outermost irregular; *ullibe* *Λ* *.* *for* *C* *f* *com*
 pound, rays few; bracts 0, or small and linear; bracteoles fill
 tew. *Scjmls* connate in a calyx-tube; limb with small, *acute*,
 often unequal teeth. *Petals* 5/obovate, emarginate. *&* ****** *s* *5*.
*Carpel** 2, connate. *Fruit* subglobose; ridges not P* * *o* *** *Λ* *ent*,
 dorsal primary and adjacent secondary strongest, lateral pr> *na*
 and secondary obscure; vitte solitary, under the secondary * << *es*,
 obscure; commissure distinctly 2-vittate; carpophore 2-p>> *lite*. *Λ*
Seed convex dorsally, with concave face, almost three tin* *s*
 broad as thick.

916. CORIANDRUM SATIVUM Linn.; F. I. ii. 94; F. 31.1-*il*, *7* *17*;
E. D. c. 1954.Cultivated in the northern and western P^{rovinces}, ^{nhan}e.
An annual glabrous herb. *Hind.* Dhaniya; *BenQ*- *Vb* ,**393. Daucus** Linn.

Annual or biennial, usually hispid herbs; *haves* **** *&* **£*
 ultimate segments small or narrow. *Flowers* white, outer ofl<<
 irregular; umbels compovoid, rays usually many; bracts p t o *Λ*
 usually many; bracteoles many, entire or 3-fid; sometimes ob*.
 of *Λ* *f* *Λ* *Λ* *M* *a* *t* *e* *i* *D* *a* *Λ* *lyx*-tube; teeth of limb sm* *l* *C*
 connat- P* *v* *Λ* *obovate*, *Λ* *rginate* *Stamen*, 5. C- *Λ* *1* *2*;
 ridges *e* *all* *f* *Λ* *d* *U* P* *t* *a* *** *<<* *e* *<1>* *m* *e* *w* *h* *a* *t* *c* *o* *m* *p* *r* *e* *s* *s* *d* *o* *r* *s* *a* *b* *j*
 primary *l* *i* *U* *Λ* *T* *6* *?* *"* *"* *"* *o* *r* *Λ* *th* *<<* *secondary* *bristly*; *>>* *a* *i* *r*
 primary Utle developed; lateral secondary the widest; *<<* *** ***

solitary under the secondary *Adgea* carpophore entire or 2-fid.
* < * < l semi-terete, dorsally subcouipressed; inner face flattened.

9". DAUCUS CAROTA Linn.; F. I. ii. 90; F. B. I. H. 718.

Cultivated, especially in the western parts.

A herb, stem 1-4 feet high. Vernac. Gijar. The Carrot.

Order LXYII. ARALIACE*.

Trees or shrubs, rarely herbs, sometimes scandent, or at first
s ^ n d e n t, at length rigid, frequently armed with prickles. Leaves
P ^ e * t e, or the upper sometimes subopposite, long-petioled,
- ^ S e, simple or compound; stipules adnate to petiole, some-
t. B n * indistinguishable from its sheathing base, or 0. Flowers
y * v, hermaphrodite or polygamous, rarely dioecious, small, in
* < * * *, racemeS) Q r ^ ^ ^ heads, bracts and braoteoles small
* ' n e o n s p i c u o u s; pedioe i s continuous with calyx-base, or jointed.
T V * e P i g y n o u s, variously crenated. Sepals connate in a tube,
*** » to ovary; limb truncate or with small teeth or obsolete.
* e t f * 5, rarely 6-7, or many, valvate or subimbricate, separating
Q r < e c i d u o u s l y c a l y p t r a t e. Stamens as many as petals and alter-
D a e with them, rarely numerous, inserted outside the disk;
E ^ W s didymous; dehiscence longitudinal, lateral. Ovary in-
" * < * . 2-l o e u l a r) or loculi as many as stamens, rarely 1-locular;
S W ^ a s many ag ceUg) oonnate or free; ovules in each loculus
8 0 1 1 ^ y, pendulous, anatropous. Fruit usually small, berry-hke
or ^ p a c e o u s, one or more cells sometimes suppressed, . beea
J n ^ l o u s; testa very thin; albumen fleshy or cartilaginous,
m e t l Q > e s r u m i n a t e; embryo minute, near hilum.

? * * lightly overlapping in bud; pedicels jointed; styles distinct;

£ < • compound; ovary (in our species) 4- or more-chambered; albumen

- 1 W e d u n i f o r m A r a n a

^ W s v i u v a t e m b u d :-

o * a r y 2 - c h a m b e r e d : - [p . 5 4 2]

Albumen of seed ruminant; pedicels continuous:—

% l e s d i s t i n c t; leaves more than once pinnately compound
Heteropanax.

Styles combined; leaves simple and palmately lobed, or if com-
Brassaiopsis.

^ ^ r e s e e d u n i f o r m i p e d i c e l s j o i n t e d; leaves more than once
Panax.

P' n n a t e l y c o m p o u n d; styles distinct. 31)

[Aralia.

"Ovary 4- or more-chambered; albumen of seed uniform; pedicels continuous ; leaves not pinnate ; styles united, at least at the base. [p. 541]

Leaves (in our species) perfectly digitally compound; fruit ang not larger than a pea Heptap Leaves simple, deeply palmately lobed, or imperfectly dig compound; fruit ovoid, -5 in. long

394. Aralia Linn.

Herbs, shrubs, or small trees, glabrous, hairy, or prickly; alternate or whorled, digitate, pinnate, or compound leaflets serrate or nearly entire; stipules small. Floe polygamo-monoecious, in solitary, less often racemed or umbels, rarely in compound umbels; pedicels jointed or not to the flower. Sepals 5, connate in a truncate or 5-toothed Petals 5 ; ovate, imbricate. Stamens 5. Carpels 2-5, a 2-5-celled ovary; styles 2-5, free or, in fertile flowers, connate at base. Fruit a small, 4-5-celled and 4-5- 2-3-celled and subglobose berry. Seeds compressed; al uniform.

918. ARALIA FOLIOLOSA Seem.; F. B. I. ii. 728.

Chittagong.

A large lax shrub, armed with numerous prickles.

395. Heteropanax Seem.

A small unarmed tree ; leaves very large, pinnately decomp almost or quite glabrous; stipuL not prominent. FW£ polygamous, umbels racemed, more or less stellately usually only the terminal umbel of each branch of the S J 7 5 C Small, ovate, obtu persistent; pedic omted. Sepals connate in a calyx with subentire limb. P***. alvate. Stamen. 2, dist thro»ghout, spreading. F«i« a laterally

919 HET Pressed ; albumen r m Panax

fragrant P. I. y. 76.

Chota Nagpur ? E Bengal ; Chittagong.

Small unarmed tree. F*r»ac. Guti-suna.

Large shrubs 0 ^ ' ^ " " DCne & Planch. « 1 « - * or angled ; stipules ^ J ' » ^ " f o ' not ; & « , , digitate or p ^ ucrapexolar, connate, not prominent. £ « > w ers

Often Polygamous; umbels in large compound panicles, young parts stellately tomentose ; bracts small, often persistent; pedicels each with a dense cluster of persistent bracteoles, not jointed. Petals connate in a 5-toothed calyx. Petals 5, valvate. Stamens 5. Carpels 2, connate in a 2-celled ovary; styles long or short, joined ; stigmas apical, oblique, introrse. Fruit a globose or tur- nate drupe ; pyrenes 2, or by abortion 1. Seed not compressed; albumen ruminant.

Leaves simple, palmate, divided about half-way down into oblong, acute segments. palmate..

Leaves compound, digitate 7 petioles' long ; leaflets lanceolate or elliptic speciosa.

920 - BRASSAIOPSIS PALMATA Kurz ; F. B. I. ii. 735. Panax pal- niatum F. I. ii. 74.

Chittagong.

A small tree, prickly towards tips of branches.

921 - BRASSAIOPSIS SPECIOSA Dene & Planch.; F. B. I. ii. 737; . . . B. 798.

Chittagong.

A small tree, ends of branches, and sometimes also the panicle, prickly.

397. PanaxLinn.

Shrubs or trees; leaves pinnate or digitate; leaflets entire or serrate. Flowers often polygamous ; umbels paniculate ; pedicels jointed. Sepals 5, connate in an entire or toothed calyx. Petals 5. Stamens 5. Carpels 2, rarely 3, connate in a 2-3-celled ovary ; styles distinct. Fruit a subcompressed or globose, rarely 3-seeded berry, the carpels rounded on the back. Seed compressed or subterete, smooth or sulcate, albumen uniform.

922 - HNA X FRUTICOSUM Linn.; F. I. ii. 76 ; F. B. I. ii. 725.

Cultivated. .

A shrub, 3-6 feet high.

398. Heptapleurum Gaertn.

Large shrubs, sometimes climbing, or trees, unarmed; leaves digitate, rarely compound digitate, or 1-foliolate; leaflets con- aceous, entire or distantly toothed or lobed, those of the upper leaves almost always entire; stipules prominent, often intra-

[Heptapleurum.

petiolar, connate. *Flowers* in umbels, rarely heads, a compound racemes; bracts woolly, deciduous or bracteoles usually few or 0, rarely densely tufted; jointed. *Sepals* connate in a toothed or truncate *Petals* 5, or 6 or more, valvate. *Stamens* (in bur species) or more (as many as the petals). *Carpels* 5 (in our species) or more (as many as the petals), connate in a 5-nary with a small or conspicuous disk; styles small, species), or sometimes connate in a narrow cylinder. *Fruit* a subglobose, 5-6-angled, dry drupe. *Seeds* albumen uniform.

923. HEPTAPLEURUM VENULOSUM Seem.; F. B.

H. 131. *Aralia digitata* F. I. ii. 107.

Behar; Chota Nagpur.

A climbing shrub. Hin[^]. Dain; Kol

399. Trevesia Vis.

Shrubs or small trees, unarmed or prickly; *leaves* digitate; petiolules often united by a basal wing; intrapetiolar or obsolete. *Flowers* polygamous, umbels paniced; bracts small or 0; pedicels not jointed; connate in a truncate or toothed calyx-tube. *Petals* 8-12, usually 10. *Carpels* 8-12, connate in an ovary cells as there are petals or stamens; styles umbo or column. *Fruit* a large, ovoid berry. *Seed* albumen uniform.

924. TREVESIA PALMATA Vis.; F. B. I. ii. 732. Gaston

F. I. ii. 407.

Chittagong.

A small tree, 10-15 feet high.

Order LXVIII. CORNACEÆ.

Shrubs or trees. *Leaves* opposite or alternate, petioled, entire or sometimes angled, lobed or serrate; *Flowers* regular, usually small, hermaphrodite or axillary or terminal cymes, panicles, or heads. *D* fleshy, sometimes inconspicuous, epigynous. *Sepals* connate, tube, adnate to ovary; limb truncate or 4-5-toothed,

or 4-5, occasionally many, epigynous, imbricate or valvate. *Stamens* inserted with and as many as, rarely 2-4 times as many as the petals; anthers short or long; dehiscence longitudinal, introrse or lateral. *Ovary* inferior, 1-4-locular, crowned by the disk; style simple, short or long; stigma capitate or 2-lobed; ovules in each locule solitary, very rarely 2-3, pendulous from apex, anatropous. *Fruit* usually drupaceous, with a solitary, 1-4-celled pyrene, less often with 2 pyrenes. *Seed* oblong, pendulous; albumen fleshy; embryo axial, sometimes minute, sometimes with leafy cotyledons.

Stamens twice or thrice as many as petals; cotyledons corrugate

Alangium.

Stamens as many as petals; cotyledons

flat.....**Marlea.**

400. Alangium Lamk.

Shrubs, sometimes climbing, or small trees, armed or not; leaves alternate, petioled, oblong, entire, 3-nerved at base. *Flowers* in axillary fascicles or condensed cymes, hermaphrodite, white; pedicels jointed under calyx; bracts 0. *Sepals* 6-10, connate in a calyx-tube, adnate to ovary; limb toothed or truncate. *Petals* 6-10, linear, oblong, valvate in bud, reflexed in flower, twice as many as petals or more (in our species usually 20-30); filaments hairy; anthers much elongated. *Carpel* solitary, inferior, crowned by a disk; style very long; stigma large, capitate; ovule solitary, pendulous. *Fruit* a 1-seeded berry, crowned with the somewhat accrescent calyx-limb. *Seed* oblong; albumen ruminant; embryo with leafy, corrugate cotyledons.

925.

ALANGIUM LAMARCKII Thw.; F. B. I. u. 741; E. B. A. 681.

•4. *liexapetalum* F. I. ii. 502.

^ehar; ChotaNagpur; W.Bengal.

A small tree, reaching 20-25 feet high, often only a shrub. *Hind.* Akola; *Benff.* Ankura; *Uriya* Ankula; *Sqntal* Dela.

401. Marlea Boxb.

Trees or shrubs; leaves alternate, petioled, orbicular or oblong from an oblique base. *Flowers* hermaphrodite, in contracted axillary cymes; pedicels jointed. *Sepals* connate in a toothed or truncate calyx-tube. *Petals* 4-8, linear, free or somewhat connate at the base, valvate. *Stamens* 4-8 (in our species almost always

Order LXIX. CAPRIFOLIACEJE.

Shrub ^{Si 6reCt 0f scandent, or small trees} » ^{veiv, rarely, herbs ;}
^{Or Q ^} ^{^es. round.} *Leaves* opposite, rarely alternate, simple, lobed,
^{inter} ^{^d-pi} ^{nnate,} sometimes 3-nately cut; stipules 0, or if present
^{rare ? ^ 10 ^ 1 *} ^{Flowet,} *Flowers* hermaphrodite, cymose or paniculate,
^{tub ^ Capitata} » regular or irregular. *Sejmls* connate in a calyx-
^{in ^ adnate to ovarv ;} ^{limb} 3-5-toothed or -lobed. *Petals* connate
^{Sfaw} ^{5-lo} ^{be<1, often} 2-lipped corolla; lobes imbricate in bud.
^{lob} ^{m6TM^S} ^{5>} ^{adnate to} corolla-tube and alternate with the corolla-
^{an} ^{es ;} ^{f a nfcellers} versatile; dehiscence introrse. *Carpels* connate in
^{dulou} ⁱⁿ ^{e n o r, 2 ~ 8} ^{celled} » ^{rarelv} 1-celled ovary; ovules solitary pen-
^{tate} ^{US, or S} ^{ereral on axial} placentas ; style long, with stigma capi-
^{cartil ^} ^{ShOrt, With sti ^ ma} 2-5-lobed. *Fruit* a drupe with 1-8
^{in e} ^{! a} ^S ⁱⁿ ^{o <<} ^s ^{pyrenes, or a many-seeded berry.} *Seeds* 1 or many
^{ach} cell; albumen copious, fleshy ; embryo usually minute.

402. Sambucus Linn.

Shrub ^{S or small trees} *Leaves* odd-pinnate, large ; leaflets serrate
^{or l} ^{aci /llate} *Stipules* absent or present. *Flowers* small, in large,
^{mu} ^{cl} ^{^ rancelled corv inbs} 1 bracts always present; pedicels jointed;
^{branf} ^{les small or 0.} *Sepals* connate in a 3-5-toothed calyx,
^{Petals} connate in a rotate or campanulate 3-5-partite corolla.
^{Stamens} 5, adnate to nearly the base of the corolla-tube. *Carpels*
^{connate} ⁱⁿ ^{a 3-5-celled ovary; ovules in each cell solitary, pen-}
^{dulous ;} style short, 3-5-partite, or stigmas 3-5, sessile. *Fruit* a
^{sm -} ^{~ d} ^{cel} ^{led berry, crowned by the calyx-teeth.} *Seeds* com-
^{ple} ^{ssed} ⁹²⁷ ^{J <} ^{6 m b r y o e l} ^{ongated.}

^AMBUCUS JAVANICA Bl.; F. B. I. iii. 2; E. D. S. 767.

N. Bengal, Duars ; E. Bengal.

A straggling shrub.

Order LXX. RUBIACE/B.

T ^{reeS >} ^{shrub} s, or herbs, rarely annual, erect or twining, unarmed
^{Or} [^] ^{pp} ^{o *lte or whorled} » ^{quite entire, with interpetiolar or less often}
^{itt} ^{ar} ^{stipules, or very rarely with stipules replaced by}
^{Se} ^{VeS,} ^{Flowe} ^{rs} often 2-3-inorphic ; inflorescence very variable.
^{opals} connate in a calyx-tube, adnate to ovary; limb various.

BENGAL PLANTS.

Petals connate in a regular gamopetalous corolla; 1^{obes 4 n 5 i ^ e} valvate, imbricate, or contorted. *Stamens* 4-5, inserted o^{*}bes, mouth or in the tube of the corolla, alternate with its ^W dor- n^laments short or obsolete, or long; anthers 2-celled, usually ally sifixed; dehiscence lateral or introrse. *DM* epigy^{***'} ^ i^{o-} annular or cushion-like. *Carpels* connate in an inferior ^ i^{o-} celled ovary; ovules 1 or more in each cell; style simple or ^{*} or stigmas various. *JW* 2-10-celled, a berry, drupe, or « ! » ^{*} eds composed of mutually separating indehiscent cocci. ^{*} d; various; albumen fleshy or horny; embryo straight or c<n^e cotyledons flat or semi-terete; radicle superior or inferior.

•Ovules numerous, or, if f_{ew}, at least more than one in each cell: ~ [P ^]
 tFruit dry, dehiscent, or if indehiscent separating into M> sev
 seeded cocci, rarely nutlike :- [p. 549]

Flowers in dense globular heads; corolla funnel-shaped I stig
 simple, far exserted : ~ ~

Ovaries confluent; fruits forming a globose, solid mass; < * > ^{ll} lobes imbricate in bud; beads not bracted; trees... Anthocep^{ll} ^{us.}
 Ovaries free or nearly s_o; fruits quite sepa^{ll}rate, capsular; coro
 lobes valvate in bud : —

Flowers intermixed with paleaceous bracteoles ; trees : - ^{ll} **Juncaria.**

Calyx-limb 5-toothed ; heads \with or without bracts - ^{A J} **re.**

Calyx-limb entire; beads with 2 wide bracts. ^{S ^ d}

Flowers not mixed with bracteoles; climbers with ^{ll} peduncles **Juncaria.**

Flowers axillary, **s oitoy oyfa ^ i ^ orin < aiw** or terminal
 cymes, racemes or panicles; never in dense globose heads: —

Coro^{ll}la-lobes twisted in bud; fruit capsular, 2-celled; seeds
 angular but not winged; flowers in panicles; trees or **shrubs**
Wendlandia.

Corolla-lobes valvate in bud: —

Trees; flowers with leafy bracts, in panicle* spikes! ^{ics} W
 capsular, ^ celled; seeds winged. Hymeno^{ll} **dictyon.**

Herbs; ^{ll} flowers ^{ll} i & ^{ll} scicled, & ^{ll} xillary, ^{ll} axillary or
 terminal cymes: —

^{ll} fruit oblong, subglobose or orbicular :- [p. 549]

^{ll} Fruit indehiscent, globose, nut-Hke, 2-celled; lobes of
 corolla 5, each 2-3-toothed ; stipules entire; flowers soli-
 tary, axillary **Dentella.**

Fruit dehiscent, usually slightly oblong, 2-celled, or if
 indehiscent (often in *HetlyotU*) the corolla-lobes 4, quite

entire; stipules bristly, not entire; flowers in cymes, not solitary:—

Calyx-teeth contiguous ; capsule (in our species) tardily dehiscent or indehiscent; seeds usually angular ; cymes dense.....**Hedyotis.**

Calyx-teeth remote ; capsule loculicidally dehiscent above calyx, very rarely indehiscent:—

Seeds minute, angular ; cymes laxly paniculate

Oldenlandia.

Seeds plano-convex or globose with a ventral cavity

Anotis.

†Fruit broadly, didymously obcordate, with 2 compressed, spreading lobes opening above calyx by gaping slits ; flowers secund in dichotomous cymes [p. 548]......**Ophiorrhiza.**

†Fr .
seed

Ult fleshy or leathery > a bent J or d™P™like with 2 or more many

£^d Pyrenes; shrubs or trees ; seeds not winged :—[p. 548] ;

°iolla valvate; seeds many, small, angled :—

^florescence lax ; fruit a berry:—

Inflorescence terminal; calyx with one lobe usually forming a coloured leaf.....**Mussaenda.**

Inflorescence axillary ; calyx equally 4-5-lobed ...**Adenosacme.**

inflorescence subcapitate ; calyx with 5 rigid lobes ; fruit a drupe with 2 many-seeded pyrenes.....**Myrioneuron.**

Co*

>lla imbricate or contorted :—

Stamens inserted at base of corolla-tube; lobes of corolla imbricate ; seeds small; cotyledons minute ; inflorescence terminal

Hamelia.

Stamens inserted at or near mouth of corolla-tube; lobes of corolla contorted; seeds large; cotyledons often leafy; inflorescence axillary :—

Ovary 1-celled ; seeds many; stigma fusiform.....**Gardenia.**

Ovary 2-celled :—

Seeds many; stigma fusiform.....**Randia.**

› Seeds few ; style-arms two :—

Flowers in axillary spikes.....**Petunga.**

i Flowers in axillary fascicles :—

Flowers sessile ; anthers hirsute, subincluded

Hyptianthera.

Flowers usually pedicelled ; anthers exserted, glabrous

Diplospora.

*Ovule

s solitary in each cell:—[p. 548]

§Cor

olla-lobes contorted in bud ; stipulee Interpetiolar, solitary; shrubs

o>

small trees :—[p. 550]

BENGAL PLANTS.

Flowers in large corymbs; stigma fusiform, exserted:—

Corolla-lobes 5; style short, pubescent; stigma stout
W e b e a Pseudixora.

Corolla-lobes 4 (rarely 5 in *Pavetta*); style long, slender; stigma slender:—
glabrous; Pa_yett>>

Bracts membranous, the lower sheathing j_xOR*.

Bracts coriaceous, not sheathing..... <joff*^f

Flowers axillary, solitary or fascicled; style-arms % linear-
§Coiolla-lobes valvate in bud:—[p. 549]

Shrubs or small trees, usually erect; leaves stipulate:—

Flowers in dense heads, calyces confluent; f^{TMts} fol ming ft
globose or oblong solid mass; erect shrubs or small^{tr}€e* Mor|Bda.

Flowers free:—

Erect shrubs or small trees :—

Fruit drupaceous ; styles not papillose:— . rftC^Ucle

Style stout, stigma large; ovules pendulous,
superior; flowers axillary, fascicled :—

Ovary 2-celled..... Canthium.

Ovary 3-5-celled Yangueria.

Style slender, stigma divided; ovules erect; i^{ill}icle in-
ferior:— "

Flowers in terminal cymes; calyx-limb shovtlf 35.
toothed; style-arms 2 Psycotria.

Flowers in axillary fascicles; calyx-limb deeply 3-6-fid;
style-arms 3-9 sia

Fruit capsular; capsule 5-valved at apex; style 6-fid, V*P
flowers densely paniced..... Ha miltoni&t

Twining foetid shrubs ; styles 2, capillary, twisted, V*P
fruit of 2 dorsally compressed, 1-seeded pyrenes; flow^{etS}
paniced Pæ

Herbs:—

ULeaves opposite, stipulate ; stipules setaceous, connate wi^{the}
petioles into a toothed cup; fruit of 2 separable cocci :-DV °Vj^{id};

Ovules pendulous ; seeds compressed dorsally, radicle supei
fruit very small, the separable cocci indehiscent Knoxia.

Ovules attached to septum of ovary; seeds oblong 5^{radicle}
inferior:—

Fruit large, corky, obiong-obovoid, acutely 3-4-k<*led be-
tween the sharp margins ; the sepa^{rable} cocci indehiscent

Fruit small, crustaceous; one or both of the separable cocci
dehl^{sc}nt..... Hydopy Jft*.

..... Spermacocce.

^Leaves whorled ; stipules replaced by leaves; fruit of two coriaceous or fleshy, indehiscent lobes [p. 550]. Rubia n

403. Anthocephalus A. Rich.

A glabrous tree ; *leaves* petioled; stipules lanceolate, caducous. « *tower** united by their confluent calyx-tubes in terminal, globose, solitary, peduncled heads; bracts stipule-like at base of peduncles; bracteoles 0. *Sepals* connate in a tubular calyx ; limb 5-lobed, persistent or deciduous. *Petals* 5, connate in a long, funnel-shaped tube; lobes of limb imbricate. *Stamens* 5, adnate to throat of corolla; filaments short; anthers ovate-oblong, apiculate. *Disk* small or 0. *Carpels* connate in an inferior ovary, 2-celled at base, 4-celled above; ovules numerous, horizontal on 2 ascending 2-fid placentas, a lobe projecting into each of the 4 upper partial loculi; style simple, exerted; stigma bifid. *Fruit* a confluent, fleshy mass of many few-seeded, succulent pyrenes. *Seeds* minute; testa thinnish; albumen fleshy; embryo clavate.

28. ANTHOCEPHALUS CADAMBA Miq.; F. B. I. iii. 23; E. D. A. 1192. *Nauclea Cadamba* F. I. i. 512.

Very generally planted.

A large tree. *Vernac.* Kadam.

404. Adina Salisb.

Trees or shrubs; *leaves* petioled; stipules large, caducous. **towers* densely crowded in solitary or paniced globose heads, on a hairy receptacle ; peduncles with or without bracts ; bracteoles 5; *sepals* connate in a 5-angled tubular calyx ; limb 5-lobed. *petals** 5, connate in a long, funnel-shaped tube; lobes valvate. *stamens*, 5, adnate to mouth of corolla; filaments short; anthers short, oblong. *Carpels* connate in a 2-celled ovary ; ovules many, intricately set on a pendulous placenta in each cell; style simple, bifid; stigma capitate or clavate. *Fruit* a cluster of capsules, each separating into 2 follicular cocci and many-seeded. *Seeds* oblong; testa winged; albumen fleshy; cotyledons flat; radicle cylindrical, superior.

•Flowers downy or silky:—[p. 552]

^Leaves petioled, orbicular, cordate, acuminate, pubescent beneath. Peduncles axillary, 1-3, 1-headed [p. 552]. *conUjolui*.

[Adina.

Leaves sessile, oblong, subcordate, tips rounded, peduncles terminal, 1-3, 1-headed [p. 551].
 • Flowers glabrous; leaves shortly petioled, lanceolate, caudate; heads in trichotomous panicles [p. 551].

929. ADINA CORDIFOLIA Hook. f.; F. 13. I. iii-24; E. i. **D. A. 51.**
Nauclea cordifolia F. I. i. 514.

Chota Nagpur; Behar; W. and N. Bengal. - ldu hardu;
 A considerable tree; wood hard. Hind. H^a ^> Uriya
 Beng. Bangka, da-kóm, petpuria, kali-kadan, komba
 Holonda; Santal. Karám; Kol KuruniD »
 sanko. - Y). A- 519.

930. ADINA SESSILIFOLIA Hook. f.; F. B. I. iii-24; E.*
Nauclea sessilifolia F. I. i. 515.

Chittagong.
 A small tree. Beng. Kúm. T? T). ^* 518.

931. ADINA POLYCEPHALA Benth.; F. B. I. i-25; E.
 Chittagong.
 A small evergreen tree.

405. Stephegyne Korth.

Shrubs or trees; leaves petioled; stipules large, caducous.
 Flowers united by their confluent calyx-tubes in globose, axillary
 and terminal, solitary or paniced or subunibelled; peduncled, with two deformed apical leaves, within
 caducous bracts; bracteoles paleaceous. Sepals 5, connate
 short calyx-tube, with a cup-shaped or tubular limb; 5-toothed. Petals 5, connate in a corolla with long,
 shaped tube; throat glabrous or hairy; lobes short, valvate.
 Stamens 5, adnate to corolla-throat; filaments short; anther
 cordate, lanceolate, apiculate. Carpel connate in a 2-celled
 ovary; ovules imbricately set on pendulous placental; filiform; stigma capitate or mitriform. Fruit of 2 to
 many-seeded cocci. Seeds small; testa winged; albumen fleshy.
 Calyx-limb short but distinct; tube of corolla much exceeding the bearded lobes.
 Calyx-limb 0; tube of corolla not exceeding the bearded lobes.

932. STEPHEGYNE PARVIFOLIA Korth.; F. B. I. iii-25; E. i. **D.**
 S. 2799. *Nauclea jmrivifolia* F. I. i. 513.

Chota Nagpur; Behar; E. Bengal, Mymensingh.

A small or medium tree. *Hind.* Kadam, keim, kangi,
Kol. Gui, komba; *Santal.* Goré.

933. STBPHEGYNE DIVERSIFOUA Hook. f.; F. B. I. m. a>; ^-

8. 2796. *Nauclea rotundifolia* F. I. i. 516.

Chittagong.

A small tree.

406. *Uncaria* Schreb.

Climbing shrubs, often with hooks; *leaves* ^{fTM}
«Pules entire or 2-fid. *Flotvers* in axillary peduncled, solitary or
Paniced globose heads, the lower peduncles often headlessj and
Wked. *SepaU* connate in a fusiform calyx -tube; hmb 5-lobed
« -partite. *Petals* 5, connate in a long, ^ ^ t w l t of
t W t glabrous; lobes valvate. *Stamens* 5, adnate to throat o
"orolla; filaments short; anthers with 2 basal bristles. *Carpd**
innate in a 2-celled ovary; ovules many, ^ e u a m f , o ' a ^ o ^
P^entas; style filiform; stigma capitate. *Frv* i an ^ ^
septicidally 2-valved, many-seeded capsule. *Seeds* with testa
winged above and below; albumen fleshy; embryo clavate.

Slender 4-angled branches and leaves glabrous; calyx-lobes small,
funded; corolla-tube glabrous; lobes glabrous or silky ; TM^*JTM*2

Pubescent, sessile.....'v' iTM M.

Stout rounded branches and leaves beneath and on oerve% ftb 0V ~" v
'<*'; calyx-lobes linear, as long as tube; corolla-tube and lobes nauy
ov pubejeent; capsules almost glabrous:—

l'eduacles all axillary, bracteate near middle; leaves beneath ^giey
tomentose with short hairs; capsules clavate, sessile.....•••••^{flora}

Peduncles teminal as well as axillary, bracteate near top, eaves
beneath rusty-tomentose; capsules spindle-shaped, with J ^ J j j £

Pedicels.....

934. UNCAEIA SESSILIFRUCTUS Roxb.; F. I. i. 520; F. B. I.

> iii. 30.

Chittagong.

»A large climber.

935. UNCARIA PILOSA Eoxb.; F. I. i. 520; F. B. I. m. 32.

Chittagong.

A stout climber.

936. UNCARIA MACROPHYLLA Wall.; F. B. I. in. 34.

N. Bengal, Duars.

A very large, strong climber.

407. *Wendlandia* Bartl.

Shrubs or small trees; leaves opposite or ternate; stipules entire or 2-fid. Flowers small, white or pinkish, in dense terminal thyrsoid or paniculate cymes; bracteoles 2-3, connate in a subglobose tube; limb 4-5-lobed; lobes small, equal, persistent. Petals 4 or 5, connate in a small, tubular, hypocrateriform or funnel-shaped corolla; throat glabrous hairy; lobes imbricate. Stamens 4 or 5, adnate to limb of corolla between the lobes; filaments 0 or elongated; anthers versatile, exserted, linear or oblong. Carpels connate in a 2-celled, rarely 3-celled ovary; ovules many on small globose placentas; funicle filiform; stigma entire, 2-fid or 2-partite. Fruit a small, loculicidally, rarely septicidally, 2-valved, many-seeded capsule. Seeds very small, horizontal, compressed; testa membranaceous obscurely winged; albumen fleshy; embryo short, cylindrical. Corolla-tube shorter than the lobes; anthers much exserted, nearly as large as corolla-lobes. Corolla-tube slender, much longer than the lobes; anthers exserted.

937. *WENDLANDIA EXHKRTA* DC.; F. B. I. iii. 50; E. W. *Rondeletia excrta* F. I. i. 523.

Tirhut; Behar; Chota Nagpur; Orissa; W. Bengal. A small crooked tree. *Hind.* Chanlai, chil-kiya, tilki, birsa; *Santal.* Hundro, pichari baha.

938. *WENDLANDIA TINCTORIA* DC.; F. B. I. iii. 38; E. *Rondeletia tinctoria* F. I. i. 522.

Chota Nagpur; E. Bengal, Mymensingh; Chittagong. A small shapely tree. *Beng.* Tula-lodh; *Santal.* Kulu. Tilla.

*08. *Hymenodictyon* Wall.

Trees or shrubs, thickened Ranges and bitter bark! leaves spicate, stipules deciduous. *Fiawen* with 1 or 2, leafy, terminal drooping panicle. small or ovate, reticulate, persistent bracts; bracteoles ovate, short, obovate, shaped like a funnel. valvate, corolla, glabrous within; lobes short, with exserted edges. adnate

corolla-t hroat; filaments short, dilated upwards; anthers linear,
 Carpels connate in a 2-celled ovary; ovules many on cylindrical,
 adnate placentas; style filiform; stigma fusiform. *Fruit* a locu-
 licidally 4-valved, many-seeded capsule, the slender placentas at
 length $\frac{1}{2}$ in. *Seeds* imbricating upwards; testa wide-winged;
 albumen fleshy; embryo minute.

939. HYMENODICTYON EXCELSUM Wall.; F. B. I. Hi. 35; E. D.
 H. 517. *Cinchona excelsa* F. I. i. 529.

Tirhut; Chota Nagpur; E. Bengal.

A deciduous tree, 30-40 feet high. *Hind.* Bhanlan,
 bhámin, dhauli, kukurkat; *Uriya* Bodoka, konu; *Kol.*
 Sali; *Sanlal.* Bhorkund.

409. Dentella Forst.

A small, weak, prostrate, annual or perennial-rooted herb;
 stem branching subdichotomously and nodes rooting; *leaves*
 axillary; Stipules connate, scarious. *Flowers* minute, solitary,
 solitary and in the forks, sessile or pedicelled, white. *Sepals* con-
 nate in a globose calyx; limb tubular, 5-fid, persistent. *Petals* 5,
 induplicate within; lobes 5, dentate,
 filicate-valvate. *Stamens* 5, adnate to middle of corolla-tube;
 anthers short; anthers linear. *Carpels* connate in a 2-celled
 ovary; ovules many on hemispheric placentas; style short;
 stigmas filiform. *Fruit* small, dry, globose, 2-celled, indehiscent,
 many-seeded. *Seeds* minute, angled; testa dotted; albumen
 fleshy; embryo ovoid.

940. DENTELLA REPENS Forst.; F. I. i. 532; F. B. I. iii. 42.

In all the provinces.

A small straggling weed.

410. Hedyotis Linn.

Herbs, undershrubs or shrubs; *leaves* opposite, rarely ternate;
 stipules or connate in a bristly sheath. *Flowers* white or
 pinkish in terminal or axillary, open, compact, or capitate cymes.
 Petals connate in an ovoid or turbinate calyx; lobes 4, acute,
 persistent. *Petals* 4, connate in a funnel-shaped or campanulate
 corolla; lobes ovate or linear, imbricate. *Stamens* 4, adnate to
 tube or throat of corolla; filaments short or long; anthers in-
 cluded or exserted, shape various. *Carpels* connate in a 2-celled

ovary ; ovules numerous, on sessile or stalked placentas on or below the middle of the septum ; style filiform ; stigma 2-fid or 2-lobed, *Fruit* a small, membranous, coriaceous or crustaceous, septicja[^] or loculicidal capsule, sometimes of 2 separable or connate cocci or quite indehiscent; cells or cocci 2-many-seeded. *Seeds* plaⁿ⁰ convex or angled; testa hardly ever winged; albumen\horn} » embryo clavate.

Capsule dividing septicidally into 2 cocci, each several-seeded and ventrally dehiscent; top of capsule rounded and protruded between the calyx-teeth ; cymes subumbellate; a much-branched, stoutish, climbing herb.....*C«»^{th m/l,}
 Capsule tardily loculicidally dehiscent on the crown only, or quite indehiscent:—

Fruit loculicidally opening on the crown ; cells many-seeded ; 1^{eftN'es} with 1 central nerve ; capsules hispid:—

Leaves narrow-linear, scabrid above; flowers in sessile. cap>^{u, u,} axillary and terminal cymes; calyx-teeth subulate, shorter than the capsule.....^{l)hii f • Tiy}

Leaves elliptic to lanceolate, scabrid on both surfaces; flowers in axillary clusters; calyx-troth trim>nlir, nbnut as lo^{n£} ftS^{the} capsule.....!.....^{M*P!*}

Fruit altogether indehiscent:

Fruit hard, minute; cells few-seeded; cymes all axillary I^{eft} longitudinally plaited, rarely flat, always more than 1-nerved : ^{res} the
 Cymes sessile ; flowers subsessile ; calyx-teeth shorter than glabrous or hispid fruit.....

Cymes peduncled ; flowers pedicel led :-

Peduncles short; calyx-teeth longer than the hispid fruit
 Peduncles long, filiform ; calyx-teeth shorter than the ^{lined^a} ^{glabrous} fruit.....^{laf ^}

Fruit membranous, broadly obconic; cells many-seeded; axillary and terminal; leaves 1 - nerved; calyx-teeth lar/*^{late} recurved)im*«r t>ij>n •*• •">t)l.....I hoi^{nso}

941. IKI.VOTIS sr.XNDKNS i<oxr>

1 1. iii. 57.

(hittagong.

A considerable clim>cr. Yvrnav. Guji.

•i> MKDYOTIS PINIFOLIA Wall.: V IV T. iii. 00.

I>ehar ; Chota Nagpur.

A slender, wiry, annual herb, with •i-aiiyted stems.

943. HEDYOTIS HISPIDA Retz; F. I. i. 364 ; F. B. I. iii. 60.
 Behar; Chota Nagpur; Chittagong.
 An annual herb ; stem terete below, 4-angled above.
944. HEDYOTIS AURICULARIA Linn.; F. I. i. 365; F. B. I. iii. 58;
 E. D. H. 66.
 N. Bengal, Duars ; Chittagong.
 A herb, 1-5-2 feet high ; stem and branches terete.
- 9*5. HEDYOTIS LINKATA Rox'b.; F. I. i. 365; F. B. I. iii. 59.
 K. Bengal; Chittagong.
 A herb, 1-5-2 feet high.
946. HEDYOTIS GLABRA Br.; F. B. I. iii. 59. *Spermacoce glabra*
 P. I. i. 368.
 Chittagong.
 A herb, 2-3 feet high ; stem round, smooth, fistular.
947. KKDYOTIS THOMSONI Hook. f.; V. B. T. iii. M.
 X. and E. Bengal.
 A small annual herb, on muddy river-banks.

411. Oldenlandia Linn.

Erect, slender, or diffuse, 2-3-chotomously branched herbs;
 usually small and narrow; stipules acute or broadly
 ovate, small, usually in dichotomous, axillary and terminal,
 paniculate cymes, rarely solitary. *Sepal** connate in a
 globose calyx; lobes 4, rarely 5, usually erect and
 adnate in fruit, occasionally leafy and close together, sometimes
 with intercalated accessory teeth. *Petal** 4, rarely 5, con-
 nate in *rotundate» hypocateriform or funnel-shaped corolla; lobes
 imbricate. *Stamen*, 4, rarely 5, adnate to mouth of corolla;
 filaments usually exerted. *Carpel* connate in a
 2-lobed ovary; ovules usually many, placental near base of
 ovary. *Hilum* 2, linear. *Fruit* a small capsule,
 linearly or didymous or angled, opening locally
 at the apex, rarely quite indented. Many-seeded.
 Seed distinctly angular; testa not winged, smooth or pitted;
 hilum angular or globose; embryo clavate.

Seed distinctly angular ; testa smooth : ; V- * > * |
 Hilum triangular, lanceolate, their bases in fruit meeting;
 solitary, 1-2-lobed, filiform, as long as the flat, subacute,
 corolla-tube hardly exceeding calyx-teeth; a
 flaccid herb ; flowers mostly in lower axils [p. «WJ *crytUdlhm*.

[Oldenlandia.

p. 557]

Calyx-teeth subulate, their bases in fruit not contiguous.

usually solitary;

Flowers sessile, or on very short, thick pedicels, us

diffuse, flaccid herbs:—

Leaves flat, ovate, elliptic or orbicular, nerves chiefly in upper axils, solitary or sometimes clustered as long as tube of rotate corolla.

flowers
yx-teeth
rinerria.
veles j flo^{ve}rs
h a dly & g j o p p g
fit*17,

Leaves with usually recurved margins, linear nerves mostly in lower axils, always solitary; calyx-teeth

as tube of corolla

Flowers pedicelled, or if nearly sessile then on axillary peduncles without peduncles in terminal sessile cymes:—

Flowers all axillary, or if terminal not panicled; miug or narrow-lanceolate leaves usually recurved:—

Peduncles solitary from the lower, or upper axils; flowers few or simple; pedicels long.

Calyx-teeth not much shorter than corolla-tube

usually solitary, sometimes two, rarely 2-flowered; capsule not extended beyond tips of pedicels; diffuse or less often erect herb.

Calyx-teeth considerably shorter than corolla-tube; always solitary, usually 1-, rarely 2-flowered; capsule not extended beyond tips of calyx-teeth; a much-branched erect herb.

Peduncles from the upper axils chiefly, usually fewer than 3-flowered; pedicels very short; cymes rarely sessile, and if so then terminal; a rigid herb.

Flowers only partly axillary, chiefly in large, open panicled cymes; erect herbs with linear leaves:—

Stem acutely 4-angled; calyx-teeth not much shorter than corolla-tube; capsules didymous; margins of calyx-teeth recurved.

Stem terete; calyx-teeth very much shorter than corolla-tube; capsules globose; leaves usually flat:—

Stem copiously branched, branches filiform, flowers small, pale; corolla under 2 in. long; (about 12-) seeded.

Stem sparingly branched, branches rigid, virgate; capsules large, dark brownish-pink; corolla over 4 in. long. many-seeded

spreading;
ules few-
tchotoma.
flowers
capsuleS
a]vV

•Beeds hardly angled; testa deeply grooved; calyx-teeth broadly triangular:— [p. 557]

Stem glabrous, leafy; branches leafy throughout; leaves opposite,
 91-1-1-1 s didymoag panrnrdata.
 b te * furfuræeoua, naked below, or with 1 pair of leaves, and wito.4
 left ves in a whorl at commencement of branching; branches usually
 wlt h each a whorl of 4 leaves or naked; capsules hemispheric
 mtdicattlis.

948. OLDB_{NLANDIA} CRYSTALLINA Eoxb.; F. I. i. 422; F. B. I. iii. 65.

C and E. Bengal; Chittagong.

A diffuse, flaccid weed. jBertgf. Panki.

949. OLDENLANDIA TRINERVIA Retz; F. B. I. iii. 66.
 Chittagong.

0*^ ^ diffuse flaccid weed.

950. OLD_{ENLANDIA DIFFUSA} B_{oxb.}; F. I. i. 423; F. B. I. m. &.
 In all the provinces.

A diffuse flaccid weed.

**• OLDENLANDIA CORYMBOSA Linn.; F. B. I. iii. 64; B. V.
 °- 132. O. *biflora* F. I. i. 423. O. *ramosa* F. I. i. 414.

In all the provinces.

A flaccid, usually diffuse, sometimes erect weed. Mind.

a*_A Dhaman-papar; Beng. Khet-papra.

952. OLDENLANDIA HEYNEI Br.; F. B. I. Hi. 65. O. *herbacca*
 F. I. i. 424.

Chota Nagpur; Orissa.

o-a *^n e^ect branching weed.

m- OLDENLANDIA CMBELLATA Linn.; F. I. i. 421; *.*!
 ^•66; E.D.O. 137.

Orissa, on sand-dunes near the sea.

A prostrate, much-branched, rigid herb. i W - Chirvfti,

9-4 ^eng. and C/rtya Surbuli.

o^4 OLDENLANDIA BRACHIATA Wight; F. B. I. iii. 66.
 » Behai-, Patna.

9-- A slender, erect herb.

0o^m OL^NLANDIA DICHOTOMA Koen.; F. B. I. iii. 67.
 Chota Nagpur.

ft>A A very slender, extensively branching herb of dry places.

956. QUWLLDIA ORICILIS DC.; F. B. I. iU. 68. O. «m*«fc«»
 F- B. I. iii. 68.

N- Bengal; Tirhut; Chota Nagpur.

A slender, erect herb of grassy places.

[Oldenlandia.

957. OLDENLANDIA PANICULATA Linn.; F. B. I. 69. *O. a* a*

F. I. i. 421.

C. and E. Bengal.

A diffuse or erect succulent weed.

958. OLDENLANDIA NUDICAULIS Roth; F. B. I. 70.

Behar; Chota Nagpur.

An erect, rather thickly softly stemmed herb.

412. Anotis DC.

Herbs, ascending or prostrate, rarely erect; stipules usually membranous or with marginal bristles. Flowers in axillary and terminal dense, rarely lax heads or cymes. Sepals connate in a compressed calyx-tube; lobes 4, with wide interspaces; lobes Petals 4, connate in a tubular or funnel-shaped corolla of shorter than tube, valvate. Stamens 4, adnate. Corolla include or exserted. Carpels connate in a 2-celled, rare placental ovary; ovules few or rarely solitary in each cell, ascending from near base of septum; style filiform linear. Fruit a didymous or laterally compressed woody crown protruding between calyx-lobes and there 2-valved, rarely indehiscent; cells 1- or few-seeded. Seds peltate boat-shaped, rarely plano-convex; testa coarsely winged; albumen horny; embryo clavate.

959. ANOTIS CALYCIATA Hook. f.; F. B. I. 73.

Chota Nagpur.

An erect, slender, annual herb.

413. Ophorrhiza Linn.

Small, erect, creeping or decumbent herbs, rarely upright; leaves usually elliptic-lanceolate; stipules caducous-axillary white, pink, or greenish, secund on the branches; terminal dichotomous cymes; bracts and bracteoles persistent. Sepals connate in a short turbinate or subglobose calyx-tube; lobes 5, small, persistent. Petals 5, connate in a tubular or funnel-shaped corolla; lobes short, the back often winged, and with a fold in the sinus. Stamens 5, adnate to corolla-tube; filaments short or long; anthers linear, 2-fid at base, 2-lobed. Carpels connate in a 2-celled ovary; ovules basal ascending placentas; style filiform; stigmas near

^{flattened} ^{giving} ^{in the middle} ^{by the calyx-limb} ^{by 2 wide-} ^{anthers} ^{ValVGS} ^{placentas} ^{divaricate} ^{many-seeded}. *Seeds* minute, ^{crustaceous} ^{albumen} fleshy; ^{embryo} clavate.

^ membranous, thin:-

^{cymes} ^{lax} and flowers glabrous; capsules glabrous

Harriaiana var. *arflentea*.

^L ^e ^J ^{mes} ^{ae} ^{nse-flowered} ^{tomentose}; capsules pubescent.... *trichocarpa*.
^{Ves} ^{fimi} ^{almost} ^{coriaceous}; cymes very dense-flowered and clothed
^{with} ^{rusty} ^{pubescence}..... ^{vmosa}

96 ^o - Q[^]HIORRHIZA HARRISIANA Heyne var. ARGBNTA Hook. f.;
^P - B. I. iii. 7B.

Chittagong.

961 ^ P^{er}ennial herb, shrubby below.

*. °I[^]HIORRHIZA TRICHOCARPA Bl.; F. B. I. iii. 78.

Chittagong.

A perennial herb.

^{qft} ^{yt}2 - OPHIORRHIZA VILLOSA Roxb.; F. I. i. 702; F. B. I. iii. 79.

^hittagoiig.

A perennial herb.

414. Mussaenda Linn.

^S ^{vub} « or undershrubs, rarely herbs, erect or climbing; *leaves*
^{PP} ^o ^a ^{ite} ^{or} ^{ternate}; stipules solitary or in pairs between the
st ^{loles}. *Mowers* yellow, scarlet, or rarely white, in terminal
^T ^m ^{es}; bracts and bracteoles small, deciduous. *Sepals* connate
^{* an} ^{oblong} or turbinate calyx-tube; lobes of limb 5, usually
^d ^{Cl} ^{iu} ^{ous}, one of the 5 frequently developed as a large, petioled,
^{na} ^{ct-like} white or coloured leaf. *Petals* 5, connate in a long
^j ^{Or} ^{olla}, tubular below, funnel-shaped above; tube usually silky,
^{throat} villous; lobes valvate, with edges everted. *Stamens* 5,
^{ac} ^{inate} to throat or tube of corolla; filaments very short; anthers
^{lille} ^{ar}. *Carpels* connate in a 2-celled ovary; ovules many on
^{Peltate} ^{fleshy} placentas; style filiform; stigmas 2, linear. *Fruit*
^a ^{reshy} ^{many-seeded} berry with an areolate crown. *Seeds*
^U ^l ^{minute} J testa pitted; albumen fleshy; embryo minute.

Calyx-teeth persisting till the fruit is ripe..... Roxburgh*.

Calyx~teeth deciduous as soon as flowering is over..... glabru

963. MUSSANDA EOXBURGHII Hook. f.; F. B. I. iii-87.
N. Bengal, Duars; Tippera; Chittagong.
A suberect shrub.
964. MUSSANDA GLABRA Vahl; F. B. I. iii. 90.
N. Bengal, Duars; Chittagong.
A rambling or climbing shrub.

415. Adenosacme Wall.

Small shrubs, branches slender, fragile; leaves very. «» «»
nous, many-nerved, sometimes toothed and glandular; stipules
and small or large. Flowers white, yellow or greenish, in axillary
terminal paniced diffuse cymes; bracts often glandular.
connate in a globose or hemispheric calyx; lobes 4-6, persistent.
Petals 4-6, connate in a short or long tubular corolla; lobes
angular, valvate with everted edges. Stamens 4-6, adnate to
corolla-tube at various levels (flowers 2-3-morphic); anthers
short; anthers linear-oblong. Carpels connate in a 2-celled or
sometimes a 5-6-celled ovary; ovules many on fleshy, placental
Placentas; style short or long, slender or thickened
stigmas 2, or 5-6, linear. Fruit a small, globose, fleshy or
berry, 2-celled or 5-6-celled, many-seeded; sometimes
dehiscent on the crown. Seeds minute, angular; testa
albumen fleshy; embryo minute.

965. ADENOSACME LONGIFOLIA Wall.; F. B. I. iii. 95.
Chittagong.
A bush with rigid, very brittle branches.

416. Myrioneuron Wall.

Small shrubs with stout branches and spongy bark; stipules
large; stipules large. Flower* white, in large peduncled, terminal
rarely axillary, capitate or corymbose cymes; bracts linear
rigid. Sepals connate in an ovoid calyx-tube; lobes 5, linear
rigid, persistent, longer than the corolla. Petals 5, connate
small tubular corolla; throat villous; lobes short, erect, hispid
Stamens 5, adnate to corolla-tube; filaments short
subulate; anthers linear, included. Carpels connate in a 8-odJJ
ovary; ovules many, on hemispheric placentas; style
pitted; albumen fleshy; embryo minute.

Le ^{ves} broadly elliptic, abruptly acuminate; nerves 15-20 pairs, nearly horizontal. *mitam.*
^z **ves** ^{elli} ^{tic} ^{de} ^{olate}, gradually acuminate; nerves 12-15 pairs, *Clarkei.*
^{ve} ^r ^v ^u ⁱ ^l ^y ^{ob} ^{li} ^{que} ⁱ ^{arched}.

⁹₆₆ MYRIONEURON NUTANS Wall.; F. B. I. iii. 96.
 Chittagong.

A small erect shrub.
⁹_{b7} MYRIONEURON CLARKEI Hook. f.; F. B. I. iii. 96.
 Chittagong.
 A small erect shrub.

417. Hamelia Jacq.

Sh ^{ubs} ^{with} ^{slender} terete branches; leaves opposite or whorled, petioled, membranous; stipules interpetiolar, deciduous. *Flowers* ⁱⁿ ^{terminal} ³ ^{an} ^{otomous} > subscorpoid cymes, rather large, ^{tu} ^{ke} ^{acts} minute. *Sepals* connate in an ovoid or ^r ^{late} ^{tube}; lobes 5, short, erect, persistent. *Petals* 5, connate ⁱⁿ ^a ^{tubu} ^{lar} or subcampanulate corolla; tube constricted at the ^{bas} ⁶ ^{slightly} ^{wangled}; throat glabrous; lobes short, triangular, ^{im} ^{bra} ^{ate} - *Stamens* 5, adnate to base of corolla-tube; filaments ^{rat} ^{ne} ⁸ ^{short} >> anthers linear, base bifid, connective appendiculate: ^X ⁸ ^{swollen}. *Carpels* connate in a 5-celled ovary; ovules many ^{on} ^a ^l ^{al} ^{centas}; style filiform, stigma fusiform, sulcate, slightly ^{wist} ^{ed} ^{cr} *Fruit* a small, ovoid, 5-locular, many-seeded berry, ^{owne} ⁴ by the somewhat 5-lobed disk. *Seeds* very small, ^{ul} ^{ar} ^{testa} membranous; albumen fleshy; embryo clavate.

⁶⁸ - HAMELIA PATENS Jacq.
 A favourite shrub in gardens; often also subsponaneous near villages in C. Bengal.

418. Gardenia Linn.

^l ⁿⁿ ^{bs} or trees, often armed; leaves opposite, rarely ternate; st ^p ^{ules} intrapetiolar, often connate. *Flowers* often large, ^m ^{al} ^{or} ^{axillary}, solitary, fascicled, or rarely cymose, often ^d ⁿⁱ ^{orphic} and polygamous. *Sepals* connate in an ovoid or ^o ^{come} calyx-tube; limb variable, tubular, spathaceous or cleft ^o ^l ^{obed}, often persistent, *Petals* connate in a tube longer than ^{the} ^{calyx} ^{limb}, lobes 5-9, contorted. *Stamens* 5-9, adnate to ^{co} ^{rolla} ^{tube}, alternate with the corolla-lobes; anthers included, sessile or nearly so, linear. *Carpels* connate in a 1-celled ovary;

ovules numerous, 2-seriate, on 2-6 parietal placentas ; style stout, stigma clavate, fusiform, or 2-fid. *Fruit* a large ovoid, globose, coriaceous or fleshy berry with a woody endocarp, sometimes splits vertically along the placentas. *Seeds* many, pressed, embedded in the placenta; testa thin; albumen embryo minute.

Shrubs without spines; stipules connate, large ; flowers large, 1 more across, solitary ; buds resinous :—

Fruit without ribs ; calyx-limb distinctly toothed :—

Calyx-teeth elongated, narrow-lanceolate to subulate; leaves up to 8-10 in. long :—

Leaves dull greenish, broadly elliptic or orbicular, obtuse, times ternate, almost sessile; nerves about 12 pairs; calyx-subulate-lanceolate, unequal, recurved ; corolla-lobes 5-9, oblique ; fruit globose ; placentas 4-5.

Leaves shining, elliptic, obtuse or subacute, distinctly nerves 20-30 pairs; calyx-teeth narrow-lanceolate ; corolla-oblong ; fruit ellipsoid or subglobose; placentas 2.

Calyx-teeth short, ovate-acute; leaves small, under 3 shining, ovate, acute or obtuse, sessile; nerves 15-20 corolla-lobes 5, oblong, obtuse ; fruit ellipsoid or oblong ; 4-5.

Fruit distinctly 5-ribbed, ellipsoid; leaves acute:-

Leaves small, ovate ; calyx-limb distinctly toothed ; teeth corolla often double.

Leaves large, 6-12 in. long, obovate; calyx-limb obscurely 5-lobed; corolla-lobes 5, broad.

Shrubs armed with spinescent, abortive branches; stipules free, deciduous; flowers small, under 1 in., the females solitary, the fascicled ; buds not resinous :—

Leaves coriaceous; corolla salver-shaped, the tube subcylindrical, beaked, ovoid or globose, smooth :-

Leaves elliptic or obovate, glabrous or pubescent beneath

Leaves often orbicular, densely tomentose beneath

turgida var- *montana*.
 Obovate, elliptic or orbicular; corolla lobes 5; fruit not beaked, ellipsoid or subglobose, obscurely 5-ribbed. *campanulata*.

969. *GAM* * *ATIFOLIA* Ait.; *F. L.* i. 706; *F. B. I.* iii. 116; *E. D. G.* 124.

W.Bengal; Behar ; Chota Nagpur.

A small tree with thick, woody, resinous branchlets.
Hind. Papra, ban-pindalu; *Kol.* and *Santal.* Papra,
 popro; *Uriya* Kota-ranga.

970. GARDENIA LUCIDA Roxb.; F. I. i. 707; F. B. I. in. 1[^] i
 E. D. G. 128.

Chittagong,

A small deciduous tree, with resinous shoots. *Hind.*
 Dikmáli.

971. GARDENIA GUMMIFERA Linn. f.; F. I. i. 709; F. B. I. iii. 116;
 E. D. G. 116.

Chota Nagpur.

A woody bush with resinous buds. *Hind.* Dikmali;
Kol. Barúri.

972. GARDENIA FLORIDA Linn. ; F. I. i. 703; F. B. I. iii. 115;
 E. D. G. 111.

In gardens in many of the provinces.

A shrub. *Vemeus.* Giindha-raj.

973. GARDENIA CORONARIA Ham.; F. B. I. iii. 117 ; B. D. G. 108.
G. costata F. I. i. 704.

Chittagong.

A deciduous tree, with resinous buds.

974. GARDENIA TURGIDA Roxb.; F. I. i. 711; F. B. I. iii. 118;
 E. D. G. 136.

Behar; Chota Nagpur.

A small deciduous tree. *Hind.* Thanella, khurrur,
 ghurga, mhaner; *Uriyci* Bhamenia, dhobelkirat; *Kol.*
 Karhar, duduri; *Santal.* Dandoukit, dodouki.

- ⁹74/2. Var. MONTANA F. B. I. iii. 118. *G. montana* F. 1.1. 709.
 Chota Nagpur.

A small tree.

975. GARDENIA CAMPANULATA Roxb.; F. I. i. 710 ; F. B. I. in. 118;
 E. D. G. 105.

Chota Nagpur, Parasnath ; Chittagong.

fi. shrub.

419. Randia Linn.

Shrubs or trees, unarmed or spinous; *leaves* opposite or with
^{01*} often arrested; stipules short, intrapetiolar, free or connate.
Flowers in axillary or leaf-opposed cymes, sometimes fascicled,
^{1e8B} often solitary. *Sepals* connate in an ovoid or obovoid or tur-

binate calyx-tub - v
 and leafy. Pedicel tubule; lobes 0 or short, or W
 8 or short tube • I... K ^ in a V a T M usly shaped corolla in *
 sessile. Disk ... Contorted. Stamens 5; anthers narrow
 embedded in the ... ovary; ovules usually many,
 fusiform, entire I ... long, slender; Btig**
 usually 2-celled ... Fruit a globose, ellipsoid or ovoid,
 pulp, angular; ... Seeded b ^ y Seeds often embedded in
 rounded, leafy cotyledons " " albumen horny, emhr y ° axial ^
 Flow
 then
 sp with a campanula ... e (sometimes in *Il. dinnttoru>h*
 ^ J in with strait s Ses- ... Small or m ^ T M - > " ^ 1 " " ^ * * *

reflexed, obtuse ^ J o ^ ! ^ . W ^ * Yefy short tubular base and broad,
 f ^ ary; berry l a * ^ ^ ^ bes broad, obtuse; flowers usually
 hmb: _
 Corolla glabrous external
 sessile form with a ri g ... solitary, of two kinds, a large
 abrous within • berry ... of ^ ^ inside > and a B smaller peduncled,
 Corolla hairy external ... long; stipules triangular ... ulifji > < > ' < -
 Peduncle; berry i-5 in ... solitary, sometimes 2-3 on one
 Corolla tubular throat ... Stipules ovate-acuminate ... ^ W ^ t / W ,
 of bes; flowers ... long, slender with Ohio flp-culilte
 fusiform, cells about 6 s ... x-teeth linear; berry small, pulp*
 Ples narrowly lanceolate

Flowers in am ary or J ... f < , dcul < t < -
 slender tube; unarmed , ^ ? P P 0 8 e d C ^ e s ! T M rolla salver-shaped ^ with
 mes sessile, solitary ... if armed, with sp in < * recurved . —
 sheathing; o w e r s & a b r o u s , Sh < > r n y p e d i c e l l ^ ; o o r o U a - t u b e m u c h
 shorter than the lobe s . , ? 1 ? S m o o t h , ' 5 - C i n . l o n g , m a n y - s e e d e d ;
 « « u n a r m e d t r e e w i t h s f ; , , ? 1 ? S m o o t h , ' 5 - C i n . l o n g , m a n y - s e e d e d ;
 leaves at least shortl y D l , , , u e U o U S h l A n c h T M T T n t t i t h H .
 corolla: cyme-branches T n i l e (1 , o f t e n h r Q T M a l t e r n a t e a x i l s o f r e d u c e d
 tube inuch , o n g e r T M * o t o m o u a ; f l o w e r s u s u a l l y p u b e r u l o u s ;
 3 - 5 i n . l o n g , a b o u t S e p r f ! T n t h e l o b e s ; b e r r y o b s c u r e l y r i b b e d ,
 reflexed spines or unar ^ e d e d ; fr climbing shrub armed with short,
 l i g n a

976. *RANDIA ULIGINOSA* DC.; F. B. I 110; E. D. R. 16.
Posoqueria uliginosa F. I. i. 712. . . .
 W. N. and E. Bengal.
 A small, rather rigid tree with thick, woody, 4-angled

branches; leaves, except on young shoots, tufted, terminal. Fruit edible, sold in bazars. Hit* & I™¹ Beng. Piralo; Vriya Pendra; Santal. Pinde; Kol. 1 mdar,

977. RANDIA DUMETORUM Lamk; F. 13. I. iii. HO; E- »• »•*
Posoqueria dumetorum F. I. i. 713. *P. nutans* F. L. i. 714.
P. longispina F. I. i. 716. *P. floribitnda* F. 1.1. TW.

In all the provinces.

A small, rather variable tree or rigid shrub with ban. «ontal spines. Vriya Pativa; Beng. Menphal, madar, ffind. Menphal, manyol, karhar; Rajbans. Gmol, SanteZ. Loto, boi bindi; Kol Pato, portoho.

978. D r^n 17 1^ I iii. 109. *Posoqueria*
 «"o. RANDIA FASCICULATA DC; r- J3- At 1U<
fasciculata F. I. i. 717.

Tirhut; N. Bengal; Chota Nagpw.

A spreading shrub.

979. RANDIA WALLICHII Hook, f.; F. B. I. iii. US-
 A^ee wl very stout but nexuous spreading Ranches.
 WOL RANDXA LONCHFLORA Lamk; F. B. I. iii. HI- *Posoqxena*
longiflora F. I. i. 718.

E. Bengal; Chittagong.

A large climbing glabrous shrub.

420. Petunga DC.

Glabrous shrubs with rigid round branches; leaves petoled, "arrowed at both ends; stipules triangular or ova*^e, oblo^h
 * W, s small, i» axillary spikes, white; bracteoles² to each flower. *Sepall* connate in an ovoid calyx-tube; lunb - J ^ ^-toothed, persistent. *Petal.* 4, connate in a funnel ^ J u b e : throat villous; lobes contorted. *Stamens* 4, adnate to mouth of «olla; anthers subsessile, linear, connective thickened at the. f. ^ <Vpol_s connate in a completely or often "completely.. 9-cel^{le} "«yi ovules 2-8, pendulous from apex of each c«i, J l- fiWorm, ft. branches Hnear, hairy. *Fruit* as m a l l , 2 - ^ , ^ d seeded berry. *Seeds* imbricate, with a thick, grooved ana t^ta; albumen fleshy; cotyledons linear.

981. PBTUNGA ROXBURHOH DC.; F. B. I. ii. 1»- ^ " i i dia race-
 «iosa F. I. i. 525. *B. polysperma* F. I. >• <>•

E. Bengal; Sundribuns.

An ^vefgreen shrub, 5-8 feet high. B«V. Pitanga.

421. *Hyptianthera* W. & A.

A glabrous shrub with terete branches; leaves shortly petioled; stipules triangular, persistent. Flowers small, white, in axillary fascicles; bracteoles small. Sepals connate in a calyx-tube; lobes 5, acute, persistent. Petals 4 or 5, short corolla; tube hairy within; lobes spreading, twisted. Stamens 4 or 5; anthers sessile, oblong, obtuse, pubescent back and at the base. Disk annular. Carpels connate in a 2-celled ovary; ovules 6-10, pendulous from the apex of the cell; style short, included, its arms large, long, bifid, hispid. Fruit an ovoid or globose berry. Seeds compressed, angular; testa thick, fibrous and plicate; albumen fleshy > small

... 2i- E- P''

982. *HYPTIANTHERA STRICTA* W. & A.; F. B. I. i»-H. 548. *Bandia stricta* F. I. i. 526.

Chota Nagpur; W. C. and E. Bengal.

A shrub, 5-10 feet high.

422. *Diplospora* DC.

Evergreen shrubs or trees, branches terete; leaves shortly petioled; stipules triangular, acuminate or lanceolate. Flowers small, in short axillary cymes, or fascicled, polygamous, white or greenish; bracteoles connate in a cup under the calyx, or free. Sepals connate in an obconic or hemispheric calyx-tube; limb truncate or 4-5-toothed or -lobed. Petals 4 or 5, a short, cylindric or campanulate corolla; lobes spreading, twisted. Stamens 4 or 5; filaments short or long; anthers or linear, often recurved. Carpels connate in a 2-celled ovary; ovules 2-3 in each cell, on septal placenta; short or long, the stigmatic arms linear or oblong, fleshy > embryo small.

983. *DIPLOSPORA SINGULARIS* Korth.; F. B. I. i»-

D. 672.

Chittagong.

A small tree.

423. *Webera* Schreb.

Trees or shrubs; leaves opposite, petioled; stipules triangular-ovate, usually deciduous, flowers in terminal corymbose cymes,

sessile or pedicelled; bracteoles 2 under the calyx or, if flowers
 ped^{ellate}, on the pedicel. *Sepals* connate in an ovoid or turbinate
 ^^l x; li^mb short or long, 5-fid, rarely 4-fid. *Petals* 5, rarely 4,
 n^{nate} in a funnel-shaped or hypocateriform corolla, with short or
 lo^{ng tube} and glabrous or villous throat; lobes narrow, usually
 Jo^{ng}, spreading or reflexed, contorted. *Stamens* 5, rarely 4, adnate
 o^{mouth} of corolla; filaments short or 0; anthers narrow-linear,
 oft^{en} acute, exserted. *Carpels* connate in a 2-celled ovary; ovules
 m^{any}, rarely few or paired or solitary in each cell (in our only
 s^{pecies} ovules solitary); style stout, usually pubescent; stigma
 oⁿ fusiform, usually far-exserted. *Fruit* a small, globose berry;
 cell^s 1- or more-seeded. *Seeds* suborbicular or cup-shaped, rarely
 an^{gular}; albumen fleshy or horny; embryo small; cotyledons leafy.
 84, WBBRA CAMPANIFLORA Hook. f.; F. B. I. iii. 106.

. Chittagong.

A large bush or small tree. *Beng.* Kankra.

424. Pavetta Linn.

Sh^{ubs} or small trees, branches terete; *leaves* opposite, petioled,
 usu^{ally} membranous; stipules intrapetiolar, usually connate in a
 lo^{ose}, deciduous sheath. *Flowers* in axillary or terminal-2-3-
 cho^tomously branched corymbs, rarely capitate; bracteoles small.
 Se^{pals} connate in an ovoid or turbinate calyx; limb short or long,
 de^{ciduous} or persistent; lobes 4, rarely 5. *Petals* 4, rarely 5,
 co^{nnate} in a hypocateriform corolla; tube slender, cylindric;
 lob^{es} spreading, contorted. *Stamens* 4, rarely 5, adnate to mouth
 or t^{hroat} of corolla; filaments long or short or 0; anthers linear.
 Dis^tieshy, swollen. *Carpels* connate in a 2-celled ovary; ovules
 80^{ltlr}ly in each cell; placentas prominent on septum; style
 sl^{ender}; stigma exserted, fusiform. *Fruit* a small, fleshy berry,
 ?th 2 papery, 1-seeded pyrenes. *Seeds* with membranous testa,
 fill^{ing} the cell; albumen horny; embryo incurved, with leafy
 coty^{ledons}.

L^{eaves} glabrous beneath or nearly so; cymes glabrnte; corolla glabrous
indica.

L^{eaves} glabrous or softly or harshly puberulous above, pubescent
 be^{neath}; cymes tomentose or villous..... *indica* var. *tome atom*.

⁹85. PAVETTA INDICA Linn.; F. B. I. iii. 150; E. D. P. 338.

Ixora Pavetta F. I. i. 385.

Chittagong.

A small tree. *Beng.* Kukura-chura.

985/2. V^ TOMETOSA F B L^ - ig() [Iora tomentosa F. I .

In most of the provinces.

A large bush or small tree. Seng. Jui; ** Sikreb»' sifcerup; 6W«Z. Budhi tiki, budhi ghasit.

425. Ixora Linn.

Shrubs or small trees; branches *««te; W* opposite, rarely... corolla; ... with 2 fid ... 2-celled ... cell; ... 2 rarest? ... Knit a globose or didymous drysh ...

Calyx-teeth much longer than ovary; ... or subsessile cymes.....acuminata.

Calyx-teeth shorter than or rarely (I. undulata) equalling the ovary :-

Cymes long-peduncled, 6-10 in. long, brachiate; flowers white

Cymes short-peduncled, ... or less :-

Cymes not jointed, ... at the ramification, brachiate; flowers white

Cymes jointed at the base, ...

Branches ... white...««>'''

Cymes brachiate, with 3-4 slender branches; flowers whiter-

Cymes corymbose

yellow; ... sessile or subsessile; flowers red or, n«W-

Corolla-lobes acutecoccinea.

Corolla-lobes roundedstricta.

986. IXORA ACUMINATA Roxb.; F. I. i. 383; F. B. L. Hi. 137;
E. D. I. 511.

Chittagong.

A stout glabrous shrub.

987. IXORA SPECTABILIS Wall.; F. B. I. iii- 141-

Chittagong.

An evergreen tree.

988. IXORA PARVIFLORA Vahl; F. I. I. osa, J ^

E. D. I. 515.

In most of the provinces.

An evergreen tree. Beng. Bangan; Hind. Loha jang-
hia; rMy. Tellu, kurwan; Xol. Pete; Santa*. Merom
met'.

989. IXORA CUNEIFOLIA Roxb.; F. I. i. 380; F. B. I. w. 144.

E. Bengal; Chittagong.

A shrub.

990. IXORA UNDULATA Roxb.; F. I. L 385; F. B. I. m. 147.

Chota Nagpur and Behar, wild. C. and E. Bengal, in
village shrubberies.

A shrub. Beng. Palaka-jui.

» 1. IXORA OCOINEA Linn.; F. I. i. 375; F. B. L. I. 513. I. Bandhuca F. I. i. 376.

Planted in every province; seems wild in Cbrttogoi*

A branching shrub. B ^ . Bangan, bandhuca (S«»S*»).

992. IXORA STRICTA Eoxb.; F. I. i. 379; F. B. I. »••^{14j}

Planted in most of the provinces.

A branching shrub.

426. Coffea Linn.

Start,, with compressed branches; leave* ^ ^ ' ^
^"•ate; stipules broad. Flowers axillary, in fasc^les or cymes
or sol^ary; bracteoles often connate. Sepah connate inart^{ort}
«lyx-tabe; limb short, often glandular, regular y ±*TM»^\
tregg many-toothed, persistent, f^{tais} ^ J " nate StonenS
short or long corolla-tube; lobes spreadmg, contortea.
4-5; filaments o; anthers narrow, adnate to ^f¹. a-throat or
tube, often recurved and contorted. Carpels connate m a 2-celled
ova¹⁷; ovule solitary, peltate on the septum in each o^{el} style
filiform, smooth, with linear or subulate arms. Fruit small
^upe with 2 plano-convex or ventrally concave, coniceous, or

BENGAL PLANTS.

cartilaginous pyrenes. *Seeds* plano-convex, concave or J^{aged} on the septal side; albumen horny; embryo short, su^{plant} cotyledons thin, cordate.

Leaves dull; branches very slender; flowers appearing when^{plant} leafless; corolla salver-shaped.

Leaves shining; branches stoutish; flowers with leaves; coro^{plant} shaped

993. COFFEA BENGALENSIS Roxb.; F. I. i. 540; F. B. *^{153.}
Chota Nagpur; N. Bengal; Chittagong.

A small shrub.

994. COFFEA ARABICA Linn.; F. I. i. 539; F. B. I. Hi-^{153.}
C. 1641.

Cultivated sparingly in Chota Nagpur. fav&>

A large shrub or small tree. *Hind.* Kahwa; *Beng-*
kapi. The Coffee Plant.

427. *Morinda* Linn.

Erect or climbing shrubs or trees; branches round or^{- a.} leaves opposite, rarely ternate; stipules connate,^{ing.} Flowers axillary or terminal, in simple or paniced or j^{h a e} peduncled heads, the calyces more or less coherent; ^{Q.} *Sejmls* connate in a short calyx-tube; limb truncate or occasi^{on} with one large, leafy, bract-like lobe. *Petals* 5, less often⁴ sionally 6 or 7, connate in a short or long tubular cor^{olla}; coriaceous, valvate. *Stamens* 5, less often 4 or 6-7, ^{adnate to} corolla-throat; filaments short; anthers linear or oblong-^{Disk} swollen. *Carpels* connate in a 2-celled or spuriously^{4-celled} ovary; ovules in each cell solitary, ascending fro^{111 a b} placenta on the septum; style slender, stiguiatic arn^{basal} long. *Fruit* usually aggregate, of many succulent, ^{gca} calyces, enclosing, numerous cartilaginous or bony, ^{ed} pyrenes, which sometimes cohere into a 2-4-celled P^{11**n} rarely a cluster of nearly discrete drupelets. *Seeds* ^{obo VOI} reniform; testa membranous; albumen fleshy or horny^{enl} terete.

Leaves tomentose on both surfaces, dull green; corolla pubescent
*tinctorial****-^{ito-a.} Leaves glabrous, shining (sometimes minutely scaberulous in *M*-^{e!} *cajolia*); corolla glabrous :—

- Ciilyx-Umb* with often ti foliaceous lobe; fruit greenish [p. 573] *bracteata*.

*Calyx-teeth all similar :—[p. 572]

Flower-heads distinctly peduncled :—

Stipules obtuse; corolla-throat hirsute; fruit whitish ...*citnfoha*.

Stipules acute; corolla-throat naked; fruit *pvrVL\Bh...angii*tifoly*.

FWer-heads sessile or subsessile*persiccefolia*.

995. MORINDA TINCTORIA Roxb. var. TOMENTOSA; F. B. I. m. 156.

M. tinctoria F. I. i. 543 partly; E. B. M. 704.

Behar; Chota Nagpur.

A shrub. *Santal* Chaili, ban-katari.

996. MORINDA BRACTEATA Roxb.; F. I. i. 544. *M. citrifolia* var.

bracteata F. B. I. iii. 156; E. B. M. 656.

Sundribuns.

A small tree, near the sea-face. *Beng.* Hardi, haldi-

kunch,ronch.

997. MORINDA CITRIFOLIA Linn.; F. I. i. 541; F. B. I. in. 155;

E. D. M. 656.

N. Bengal, cultivated.

A small shrub in one form; in another a woody herb.

Hind. Al, ak; *Beng.* Ach.

998. MORINDA ANGUSTIFOLIA Roxb.; F. I. i. 547; F. B. I. iii. 156;

E. B. M. 652.

Chittagong.

An erect shrub or small tree. *Beng.* Daruharidra.

999. MORINDA PEBSIOEFOLXA Ham.; F. B. I. iii. 157; E. B.

H. 703.

Chittagong.

A low, diffuse shrub, with slender, flexuous branches.

428. Canthium Lamk.

Unarmed or spiny, erect or climbing shrubs; branches terete; ^{le}es opposite; stipules connate. *Flowers* small, sometimes Polygamous, white or greenish, axillary in fascicles or in peduncled ^corym&_{se} cymes. *Sepals* connate in a small obconic or turbmate ^{cai}yx; limb short, 4-5-toothed, persistent or deciduous. *Petals* 4-5, connate in a funnel-shaped, campanulate or urceolate corolla-tube, with a ring of deflexed hairs inside and with a villous throat, ^{lob}es spreading, at length reflexed, valvate. *Stamens* 4-5, on the toroat or mouth of the corolla; filaments very short or 0; anthers ^{ob}long or ovate. *Disk* swollen. *Carpels* connate in a 2-oellea ^{ov}ai7; ovules solitary, pendulous in each cell; style stout; stigma

large. *Fruit* a didymous or subglobose, 2-celled drupe, or 1*^{led} from abortion and reniform or oblong; pyrenes two, each 1-0^e n~' or one 2-celled, or one 1-celled, the other aborted. *Seeds* obio^hor^j testa membranous; albumen fleshy; embryo elongated with s cotyledons.

Unarmed shrubs; leaves quite glabrous, as are the branches :—

Pyrenes more or less wrinkled or tubercled, rounded on the ^ ^

Pyrenes quite smooth, triangular, almost keeled ijlo^
Armed with decussate, opposite, rarely ternate, sharp axillary or s^{led}; what supra-axillary spines; pyrenes more or less wrinkled or tubeic rounded on the back :—

Leaves quite glabrous, as are the branches..... anffU»tij^linH

Leaves pubescent on both surfaces; branches hispid, pubescent parvrj^{oi%ou} m.

1000. CANTHIUM DIDYMU M Roxb.; F. I. i. 535; F. B. I-^{iii 132>}
E. D. c. 890.

Behar; Chota Nagpur.

A stout evergreen shrub. *Santal.* Garbha gojha.

1001. CANTHIUM GLABRUM Bl.; F. B. I. iii. 133.

N. Bengal, Duars.

A small tree.

1002. CANTHIUM ANGUSTIFOLIUM Roxb.; F. I. i. 533; F. Bⁱⁱ I.
iii. 135.

Sundribuns; Chittagong.

A spreading shrub. *Beng.* Kota-malli. fi I.

1003. CANTHIUM PARVIFOLIUM Roxb.; F. I. i. 534; F. »-
iii. 135.

Behar; Chittagong.

A spreading shrub.

429. *Yangueria* Juss.

Unarmed or spiny erect shrubg; branches ^^, leaves opp^ site; stipules connate. *Flowers* small, white or greenish, a xi ^ in f. cleV" T^{dUnCled} C*TM*> - below the leaves in 1*£ Tbnt. 1. ^ Connate in a «^ obconic or turbinate * globose calyx; l_{imb} erect or some^{***} being regularly 5.

or 6, con-
arceolate corolla-tube, with a ring of deflexed hairs inside and a villous or glabrous throat; lobes spreading, at

kngrb reflexed, valvate. *Stamens* 5, rarely 4 or 6, on the throat
 «* month of the corolla ; filaments very short or 0; anthers oblong,
 «** swollen. *Carpel** connate in a 5-<*Ued_-/eSS..o'wle2>ui-
 6-celledovary ; ovules solitary,pendulous in each cell; *g*jfbi
 ^gma large. *Fruit* a dry or fleshy drupe or berry, « * « £ » '
 mx, with 2-6 pyrenes or a 2-6-celled stone. *Sectls* sohtary^
 e<<* pyrenc or cell, oblong; testa membranous; albumen fleshy ,
 embryo elongated, with short cotyledons.

TT

...alulte.

Unannea.....

Ar med with straight, opposite or ternate spines:— q)j)ma.

Leaves glabrous or nearly so..... u"ii,"<iirfiuses

Leaves more or less pubescent or tomentose on both m r ^ ^ ^^
spitt

1004. VANGUERIA EDULIS Vatal; F. B. I. iii. 136 ; E. D. V. 22.

Cultivated occasionally.

A small tree, native of Madagascar.

1005. VANGUERIA SPINOSA Roxb.; F. I. i- ^ 5 F<< B, L 11h 13 .. .06;

K. D. V. 25.

N. and E. Bengal.

A small tree or large bush. *Vernac.* Moyena:

1005/2. Var. MOLLIS F. B. I. iii. 136.

In all the western provinces.

A small tree.

430. Psychotria Linn.

Shrubs or small tree,, rarely herbs, erect, rarely twining = *leaves*
 opposite, rarely Stately whorled; stipule• " ^ C *often*
 ^nate, solitary or in pairs, with often 8 ^ ^ - ^ *hairs.*
 f'o« ,m ta tel,ninali rarely axillary cymes, heads *icles;*
 Wets present or absent. *Sepal*, connate n, .» » h « r t ^t *ube-*
 ^b dually deciduous. P*teb 5, rarely 4 or 6, con *in a*
 *aight, short corolla-tube; throat naked or hairy ; w *bes*
 «*»«*. «, rarely 4 or 6, on the mouth or throat of the *corolla-*
 ^be, incideua or exerted; filaments short « long, *ers*
 °blong or linear. Coiyrf. connate in a 2-celled " ^ *ovules*
 >*sal, erect, solitary in each cell; style short; f ^ T L *ms*
 »'»U a smaU ovo'd, globose or oblong, rarely * J S g J J ,
 ^with two 1-seeded, plano-convex pyrenes, rarely sep *thin;*
 ^ weei. *Sad.* plano-convex, the face flat or grooved ; testa

albumen hard, sometimes ruminant; embryo small; cotyledons leafy.

1006. PSYCHOTRIA ADENOPHYLLA Wall. \ F. B. I. & 1641

Chittagong.

A shrub.

431. Lasianthus Jack.

Shrubs, often fectid; branches terete with compresses leaves opposite, distichous; stipules interpetiolar, Flowers small, in axillary, rarely peduncled, fascicles cymes; bracts present or absent. Sepals connate in a or oblong calyx-tube; limb persistent, short or long, 3- rarely truncate. Petals 4-6, connate in a funnel-shaped crateriform tube; throat villous; lobes spreading Stamens 4-6, adnate to corolla-throat; filaments short; linear or ovate-oblong, often apiculate. Carpels connate 4-9-celled ovary; ovules linear, basal, solitary in each short or long; stigmatic arms 3-9, short, obtuse. Frm drupe with 3-9, 3-cornered, 1-seeded pyrenes. Seeds testa membranous; albumen fleshy; embryo cylindric.

Calyx-limb toothed; teeth linear or subulate-lanceolate; flowers i

Cymes: ~ ~

Stipules ovate, acute; calyx-teeth linear, ciliate; coioi

bracts ovate-lanceolate, the outer large and leafy; drupes vi

Stipules linear-lanceolate; calyx-teeth subulate-lan

white; bracts subulate; drupes glabrous, small.

Calyx-limb truncate, subentire; stipules triangular, subsolitary.

1007. LASIANTHUS CYANOCARPUS Jack.; F. B. I. ii-179 <

Chittagong.

An evergreen bush.

1008. LASIANTHUS WALLICHII Wight; F. B. I. iii-180 *

Chittagong.

A shrub.

1009. LASIANTHUS TRUNCATUS Bedd.; F. B. I. iii-189.

Orissa.

A shrub.

432. Hamiltonia Eoxb.

A hispid, erect, 3-chotomously branched undershrub, usually foetid when bruised; branches terete; leaves opposite, petioled; stipules triangular, deciduous. Flowers in axillary and terminal, panicled cymes; bracteoles present or absent. Sepals connate in an ovoid or turbinate calyx-tube; limb persistent; lobes 4-5, valvate. Petals 4 or 5, connate in a tubular or lobed, 3-toothed, persistent. Stamens 4 or 5, adnate to corolla-tube; filaments 0 or very short; anthers linear-oblong, obtuse. Carpels connate in a 2-celled ovary; ovules erect, basal, solitary in each cell; style slender; stigma 2, capillary, twisted. Fruit flattened or globose; epicarp thin, fragile, shining, separating from 2 orbicular or oblong, dorsally compressed, membranous or coriaceous pyrenes. Seeds 5 or fewer, embryo with cordate, duplicate cotyledons.

- HAMILTONIA SUAVEOLENS Roxb.; F. I. i. 554; F. B. I. Sii - 197; E. D. H. 13.

Behar; Chota Nagpur.

A small shrub, 4-12 feet high. Kol, Kudia.

433. Paederia Linn.

Twining shrubs, foetid when bruised; branches terete, petioled; leaves opposite, rarely ternate, petioled; stipules triangular, deciduous. Flowers in axillary and terminal, panicled cymes; bracteoles present or absent. Sepals connate in an ovoid or turbinate calyx-tube; limb persistent. Petals 4 or 5, connate in a tubular or lobed, 3-toothed, persistent. Stamens 4 or 5, adnate to corolla-tube; filaments 0 or very short; anthers linear-oblong, obtuse. Carpels connate in a 2-celled ovary; ovules erect, basal, solitary in each cell; style slender; stigma 2, capillary, twisted. Fruit flattened or globose; epicarp thin, fragile, shining, separating from 2 orbicular or oblong, dorsally compressed, membranous or coriaceous pyrenes. Seeds 5 or fewer, embryo with cordate, duplicate cotyledons.

[Paderia.

Fruit much compressed ; pyrenes separating from a filiform carp somewhat winged
 .Fruit subglobose ; pyrenes not separating from a filiform

, . T ui. 195;

1011. P^ADERIA FCETIDA Linn.; F. I. i. 683; F. *
 E. D. P. 4.

C. and E. Bengal; Chota Nagpur ; chittagong, an(jhali;
 A slender twining shrub. Hind. Somraj, g^a
 Uriya Gandali; Beng. Gandha bhadulia.

1012. P^ADERIA TOMENTOSA Bl.; F. B. I. iii- 197.

N. Bengal, Duars.
 A slender twining shrub.

434. Knoxia Linn.

Erect herbs or midershrubs; stems terete or obtusely with 2 lines of hairs; leaves opposite ; stipules connate petioles in an entire or bristly sheath. Flowers dimorphous or lilac, subsessile on the elongating branches of terminal rarely spicate ; bracteoles 0. Sepals connate in an ovoid or mous calyx-tube ; limb persistent; lobes 4, subequal or longer than the others. Petals 4, connate in a corolla tube and villous throat; lobes valvate with inflexed tips. 4, adnate to corolla-throat; filaments short; anthers eluded or exserted. Carpels connate in a 2-celled ovary in each cell solitary, pendulous; style filiform; stigma included, 2-lobed. Fruit small, of 2 semiterete or dors pressed, indehiscent, separating cocci. Seed with mem testa and thickened funicle ; albumen fleshy ; embryo axia . Leaves petioled; flowers in corymbs of spikes; ripe fruit from the persistent columella by a basal perforation
 Leaves sessile; flowers in compound corymbs; ripe fruit falling bodily with the columella bract*

1013. KNOXIA CORYMBOSA Willd.; F. B. I. iii. 128. Sperm^{**0*}
 teres F. I. i. 367. S. exserta F. I. i. 368.

In all the western provinces.

An erect slender annual.

1014. KNOXIA BRACHYCARPA HI.; F. B. I. iii. 130. Sperm^{**0*}
 Icevis F. I. i. 368.

Chota Nagpur, Parasnath.

An erect strict herb, 2-4 feet high.

435. Hydrophylax Linn. f.

Stout, l b. 10US> crce P in 8' succulent herbs with terete brunches;
 leaves opposite; stipules sessile > ovate-oblong; stipules connate with the
 petioles broad, truncate marginal bristles. Flowers small or minute, solitary
 or in fascicles, heads or cymes. Sepals consistant lobed, or obsolete with 2-4, rarely 5 lobes, and with sometimes
 or hairy bristles. Petals 4, connate in an infundibular tube of corolla lobes valvate. Stamens 4, adnate to
 or oblique throat of corolla; filaments short or long; anthers linear
 cells on sepals solitary on septal placentas; style filiform; stigma with 2
 small or capitate. Fruit of 2 coriaceous or crustaceous
 grooves; which ultimately dehisce. Seed oblong, ventrally
 fleshy; testa thin, often granulate; albumen horny or firmly
 embryo axial with leafy cotyledons,
 dehiscent, stigma subglobose; both halves of capsule
 separating septicidally.....*tricta.
 ventral style-arms 2; one half of capsule only dehiscent
 separating septicidally, the other remaining closed by the
 hispida.

1015. HYDROPHYLAX MABITIMA Linn, f.; F. I. i. 373; F. B. I. iii. 199.

Orissa, on sand-dunes along the coast.
 A creeping succulent herb.

436. Spermacoce Linn.

Herb or low undershrubs J branches usually quadrate; leaves
 opposite; stipules connate with the petioles in a broad, truncate
 marginal bristles. Flowers small or minute, solitary
 or in fascicles, heads or cymes. Sepals consistant lobed, or obsolete with 2-4, rarely 5 lobes, and with sometimes
 or hairy bristles. Petals 4, connate in an infundibular tube of corolla lobes valvate. Stamens 4, adnate to
 or oblique throat of corolla; filaments short or long; anthers linear
 cells on sepals solitary on septal placentas; style filiform; stigma with 2
 small or capitate. Fruit of 2 coriaceous or crustaceous
 grooves; which ultimately dehisce. Seed oblong, ventrally
 fleshy; testa thin, often granulate; albumen horny or firmly
 embryo axial with leafy cotyledons,
 dehiscent, stigma subglobose; both halves of capsule
 separating septicidally.....*tricta.
 ventral style-arms 2; one half of capsule only dehiscent
 separating septicidally, the other remaining closed by the
 hispida.

1016. SPERMACOCE STRICTA Linn. f.; F. I. i. 370; r.
Behar; Chota Nagpur.
A herb, usually erect, always annual.
1017. SPERMACOCE HISPIDA Linn.; F. I. i. 373; F. I. iii. 200;
E. D. S. 2515.
In all the western provinces.
A herb, always procumbent, often perennial-
Madanaghanti; Santal. Pitua arak'.

437. *Rubia* Linn.

Herbs, erect, diffuse or climbing, hispid, scabrid or stems slender, quadrate; leaves in whorls of 4-8; stipules 0. Leaves opposite and stipulate. Flowers small or minute and terminal cymes; pedicel jointed under ovary. in a globose or ovoid calyx-tube; limb 0. Petals 4-5, a rotate, funnel-shaped or shortly campanulate corolla valvate. Stamens 4 or 5, adnate to corolla-tube; anthers globose or oblong. Carpels connate in a 2-celled ovules solitary in each cell, erect on septal placentas; or styles 2, short; stigmas capitate. Fruit small, mous, or globose by suppression of one carpel. Seed adnate to pericarp; testa membranous; albumen horny somewhat curved; cotyledons broad, foliaceous.

1018. RUBIA CORDIFOLIA Linn.; F. B. I. iii- 202; B. P-
B. *Munjista* F. I. i. 374.

Chota Nagpur, Parasnath.

A climbing herb with perennial root-stock.
Manjith.

Order LXXI. COMPOSITE.

Herbs or shrubs, rarely trees. Leaves alternate, rarely or whorled; simple or less often compound; stipules 0. many, small (florets), aggregated in centripetal heads, the dilated top of the peduncle (receptacle), the heads enclose an involucre of 1- or more-seriate, free or connate bracts; teoles 0, or reduced to paleate scales or bristles on the individual florets all tubular (head discoid), or the outer, or ligulate (head rayed); all 2-sexual or the inner 2-sexual or the outer female or neuter; sometimes dioecious. Sepals connate

§ Pappus of slender hairs ; receptacle always naked :—[p. 581]
Bracts of the involucre several-seriate, numerous

Bracts of the involucre 4, with sometimes a single
one

{Flowers, if similar (homogamous) and tubular, yellow; «[^] the (heterogamous), at least those of the disk yellow ; or, if none of the flowers yellow (*Lagascea*, *Emilia*), then with the bracts purple involucre only 1-seriate, rarely (some INULOIPE/E) flowers heterogamous with bracts many-seriate, but if so, with the heads at least gamous :—[p. 581]

IFAnthers appendaged at the apex:—[p. 586]

**Receptacle naked, smooth or foveolate ; sometimes foveolate the edge of the pit fimbriate but not beset with pales B ; if paleaceous (*Athroisma*) or pseudopaleaceous then with the anther-bases produced into tails :—[p. 584]

OBracts of the involucre many-seriate ; leaves a [p. 584]

Anthers subentire at the base ; style-arms flattened or convex, all, or at least those of the disk-florets, till cone (ASTEROIDE[^]) ; all the flower-heads heterogamously

Flower-heads without a proper ray ; pappus here or altogether absent:—

Achenes minute, oblong, smooth ; pappus absent

Achenes flattened or subterete, with a ternate or bristly pappus-ring

Flower-heads with distinct ray-florets :—

Ray-florets ligulate, never yellow, ligules 2-d-s pappus long, copious

Ray-florets slender, tubular, or with very short yellow like those of the disk :—

Pappus long, copious

Pappus short, scanty

Anthers cleft at the base or rarely (*Laggera*) with subentire, and if so, with the style-arms of the hernanditate florets filiform; style-arms filiform, linear, or less than those of the sterile florets undivided (INULOIPE[^])

H-Female florets, if present, filiform :— [p. 593]

X Style-arms of hermaphrodite florets filiform ; heads androgynous:—[p. 583]

-5-Receptacle naked; bracts of the involucre herbaceous or scarious : — [p. 583]

Flower-heads medium, separate, solitary, in corymbs or panicles, not in globose clusters ; or, if clustered (some *Tylomas*), then the achenes with a copious soft pappus :—

Pappus copious, of soft or bristly hairs :—

Herbs ; bracts of the involucre narrow ; flowers not corymbose :—

Anther-cells tailed at the base, the tails of adjacent anthers confluent **Blumea.**

Anther-cells subentire at the base, or if tailed the tails short and not united

Laggera.

Shrubs ; bracts of the involucre broad ; flowers corymbose **Pluchea.**

Pappus absent, or represented by only 1-2 rigid scales or bristles **Epaltes.**

Flower-heads small, in dense globose or ovoid masses ; herbs with winged stems ; pappus absent

Sphseranthus.

-r-Receptacle with paleaceous scales ; female florets enclosed in the long outer scales of the receptacle or in the inner bracts of the involucre ; flower-heads aggregated in dense terminal clusters or short spikes [p. 582] **Athroisma.**

X Style-arms of hermaphrodite florets truncate ; bracts of the involucre hyaline :— [p. 582]

Flower-heads many-flowered ; heads heterogamous, disciformi ; receptacle naked ; hoary or woolly herbs

Gnaphalium.

Flower-heads 1-flowered ; heads homogamous, crowded in pseudo-paleaceous, axillary common receptacles, the bracts of the involucre of individual heads simulating paleae ; glabrous marsh herbs

Caesulia.

+Female florets, if present, ligulate ; heads heterogamous, but florets usually all fertile, with linear style-arms rounded or dilated at their tips ; receptacle naked :— [p. 582]

Achenes faintly ribbed ; flowers usually rayed ; pappus-hairs all slender, those of ray-florets few or none

Yicoa.

Achenes distinctly ribbed ; flowers either rayed or discoid ; pappus of outer florets scaly, of inner florets hair-like **Pulicaria.**

©Bracts of the involucre 1-seriate, subequal, free or united, with sometimes a few short outer bractlets (calycules) at base; heads heterogamous or homogamous; *n. her-ccj s subentire at the base; receptacle naked:—[p- 582 j o ^ fitU l
 Leaves alternate; pappus of fine hairs usually s generally copious (SENECIONID^E); style-arms of h ei maph^ Q. dite "florets truncate or obtuse, penicillate or wit h a tip :—

Heads ail homogamous; florets (in our speC ies, ^ fill g m j i J a.
 P^{ur}Ple senecio-
 Heads rayed, heterogamous; florets all yellow. (He E.
 Leaves opposite; pappus paleaceous or ^ se l j or not, NIOIDE;E in part); style-arms truncate, penicilla e
 or shortly appendaged at tip; heads heterogamO n S f i j s very
 Pappus absent; leaves entire or dentate; h (R) Fla yer ia.
 small, ray sometimes absent. * . Fla neflds
 Pappus present, paleaceous; leaves pinnatisec t . eg.
 large; flowers showy. Taget br>> cts

**Receptacle paleaceous; anthers subentire at the base >> ^ eter0. of the involucre 1-many-seriate; heads usually radiate, ^ ^ gamous; style-arms truncate or appendaged, or those ^ ^ sterile florets entire; pappus of 2-4 awns, or Pale ^ C e < J ier' up absent; leaves at the base usually opposite, those big opposite or alternate (HELIANTHOIDE^E):—[p- 582 ^ talons;

Anthers free or nearly so; female florets all ape ^ i ^ heads 1-sexual, rarely heterogamous; male floret s ni ^ ^ globular heads; bracts of the involucre 1-seriate, ^ ^ female florets 2 together, united with the involUCI ^ h i u m . prickly burr; pappus 0; leaves all alternate. . . . ^ a n

Anthers united in a tube:—

Heads 1-flowered, in globose clusters; bracts of tñ e in- volucre forming a 5-fid tube; lower or all the leaves oppo- site; villous herbs. . . . L a g asce ^
 Heads many-flowered :— " ^ ke,

tfPappus consisting of only 1-4 bristly awns, or cup or absent:—[p. 586] - o chene S l
 Corollas of the fertile florets persistent on the ^ in n i a .
 pappus of 1-3 awns; leaves opposite
 Corollas of all the florets deciduous:—

JtAchenes all thick, or those of the ray-florets 3 cor- nered, and those of the disk laterally sed; corn P r < L . o x
 pappus cup-like or composed of 2-3 stiff, ch any ^ bristly awns with or without intermediate sx>>

scales, or altogether absent; leaves usually- opposite :— [p. 586]

Inner bracts of the involucre embracing and enclosing the achenes of the fertile ray-florets; pappus absent:—

Outer bracts of the involucre 5, glandular

Siegesbeckia.

Outer bracts of the involucre 4, in two opposite pairs, glabrous.....**Enhydra.**

Inner bracts of the involucre all flat:—

Scales of the receptacle flat, very narrow, usually few ; disk-florets 4-toothed ; ligules small ; pappus absent, or, if present, shortly 2-awned ; outer bracts of the involucre numerous

Eclipta.

Scales of the receptacle concave or complicate, more or less enclosing and embracing the disk-florets : —

Achenes wingless, compressed or 4—5-cornered :—

Pappus united at *the base into a ring or cup ; flower-heads small or medium ; ray-florets fertile :—

Ray-florets white with small ligules ; disk-achenes with 2-5 persistent awns ; leaves opposite, at least below

Blainvillea.

Hay-florets yellow, ligules large ; disk-achenes with 1—2 short, deciduous awns ; leaves all opposite.....**Wedelia.**

Pappus scales or awns free from the base ; flower-heads large ; ray-florets sterile :—

Awns of the pappus deciduous or persistent, intermediate scales present, persistent ; leaves always alternate

Tithonia.

Awns of the pappus deciduous, often paleaceous, without intermediate scales ; leaves alternate or opposite...**Helianthus.**

Achenes of the disk ciliate or winged on the margins, laterally compressed ; heads small ; leaves always opposite.....**Spilanthes.**

‡ {Achenes more or less depressed from the top;
 pappus of 2, rarely 3-4, bristles, or absent 584
 Outer bracts of the involucre almost equal her-
 baceous; inner bracts separate, almost resembling
 the scales of the receptacle; ray-nore fertile;

leaves opposite:—

Achenes almost 4-cornered, without pappus
 but crowned by the densely P^{loSC} of
 corolla..... Guizotia.
 Achenes flat, margins lacerate and winged;
 pappus present, composed of bristles. **nedrella-**

Outer bracts of the involucre few, inner
 bracts connate below, membranous:—

Style-arms truncate, penicillate, or cili-
 a short appendage:— florets f^m
 Leaves alternate, pinnatisect; with
 tile; achenes narrow, flat, long-cilium
 2 striate, smooth, ultimately recurved awns

Leaves opposite, simple to pinnate
 florets sterile; achenes with 2-4
 ultimately finely serrulate on inner side

Achenes more or less beaked..... Bidens

Achenes not beaked..... Bidens

Style-arms ending in a long, short
 appendage; ray-florets fertile:—

Achenes long, crowned with 2-3
 persistent bristles; leaves mostly radical

Achenes without awns; leaves mostly
 scattered..... Chrysanthemum

Pappus of numerous scales; heads radiate,
 opposite:— [p. 584]

Scales of pappus oblong, chaffy; heads very

Scales of pappus feathery, fringed; heads

% Anthers not appendaged at the apex; receptacle (in our species)
 not paleaceous; pappus absent or reduced to a raised rim,
 scaly and short; leaves usually alternate (ANTHEMIDE):—

Flower-heads radiate; bracts of the involucre rather
 pappus of short scales sometimes present [p. 587] Chrysanthemum

Flower-heads discoid, heterogamous ; pappus absent:—[p. 586]
 -florets of the circumference very numerous; achenes flat or
 concave at top ; flower-heads spherical or hemispherical:—
 Heads peduncled ; bracts of the involucre 1-2-seriate

Cotula.

Heads subsessile:—

Bracts of the involucre 2-seriate, spreading in fruit

Centipeda.

Bracts of the involucre 3-4-seriate, incurved in fruit

Sphseromorpha.

•Florets of the circumference few; achenes obovate or rounded
 at top ; flower-heads very small, in racemes or panicles

Artemisia.

†Style ^{arin}s very short, hairy or thickened towards the base, or the style
 subent^{IFe} Λ. aΛ Λ^e Λ^{ore}*sⁱ which are similar and tubular to the deeply
 5-fid^{mout}h; anther-cells always appendaged at the apex, either sub-
 enfcare^{or} oΛ^e a* *Λ^e base; receptacle usually paleaceous; leaves
 alt^{ate}, generally spinescent (CYNAROIDE,E) :—[p. 581]

Flower-heads 1-flowered; crowded into dense spherical balls;
 l^c«nes inserted in the straight areoles of the receptacle, silky;
 eaves and bracts of the involucre spinescent and thistle-like

Echinops.

Fl. o
 •flower-heads many-flowered, separate ; achenes glabrous:—
 Achenes inserted in the straight areoles of the receptacle :—
 leaves and bracts of the involucre spinescent, thistle-like;
 Pappus-hairs connate at the base into a deciduous ring :—
 •* -Filaments free, papillose-hairy ; pappus-hairs feathery

Cnicus.

Filaments connate, glabrous ; pappus-hairs simple...**Silybum.**
 Leaves and bracts of the involucre unarmed; filaments free:—
 Pappus-hairs 1-seriate, feathery, or only a few of the outer
 ones simple ; filaments glabrous.....**Saussurea.**

Pappus-hairs many-seriate, subpaleaceous; filaments hairy

Goniocaulon.

•achenes inserted in the very oblique or quite lateral areoles of the
 receptacle ; leaves and bracts of the involucre spinescent:—

Bifacts of the involucre without any whorl of outer leafy bracts
 (calycule); pappus many-seriate, bristly except the flattened
 innermost.....**Yolutarella.**

Bracts of the involucre with a distinct whorl of spinescent,
 leafy bracts at their base; pappus (in our species) wanting

Carthamus.

*C^{oll}ollas of all the florets flatly expanded from a tubular base (ligulate);

[*Ethulia*.

ligules 5-toothed; anthers cleft at base, rarely appendage ^A at apex;
 leaves radical or alternate; stem always herbaceous, fistu^lose, sap milky

(CICHORIE^A):—[p. 581]

Pappus of scales, with sometimes alternating hairs, or P^{ap} ^r ^r ^s absent;
 achenes truncate; florets blue..... ^L ^{ori} ¹¹¹¹¹,

Pappus of hair-like bristles, at least in the central florets o^f ^t ^e ^h ^e ^s ^r
 florets yellow :—

Pappus-hairs feathery; achenes contracted at both ^{endg} ^{ribbed} >
 rugose..... ^{picric}

Pappus-hairs simple :— ^{ribbed}; ^{ribS}

Achenes beaked and also contracted at the base,
 rugose or smooth:— ^{rnclri} ⁰, ^o ^{en}

Achenes fusiform or oblong, rarely shortly cy^l ^{Cpe} ^{pi} ⁶.
 slender, glabrous, or puberulous..... ^{nai} ^T ^{ow}

Achenes compressed or flattened, ovoid, oblong, 01 ^j [^] ^t ^a ^c *

Achenes not beaked :—

Achenes narrowed at base, truncate at apex :— ^{picridi} ^{u111},

Achenes oblong with 4-5 rugose ribs..... ^h ^{or} ^{rugose}

Achenes compressed, many-ribbed; ribs smoot ^g ^{onchu} ^{s<}
 ^{kaune} *'

Achenes truncate at base as well as at apex.....

438. *Ethulia* Linn.

Branching herbs; *leaves* alternate, penninerve^d, ^s ^{er} ^{ra} ^{te} >
 FZower-heads small, homogamous; involucre subcann^d, ^{QalyX'}
 bracts many-seriate, imbricate; receptacle flat, naKe^d. ^{tubular}
 limb 0. *Petals* 5, connate in equal, regular, slender, ⁵, ^{syn-}
 corollas; limb campanulate; lobes narrow. ^{Stavie} *' ^h ^{subulate},
 genesious; anthers obtusely auricled. *Style* wit^h ^{ro} ^{mi} ^{nent}
 puberulous arms. *Cypsela* glandular between the ^p
 4-6 ribs; areole broad with a callous ring; pappus ^O.

1019: ETHULIA CONYZOIDES Linn.; F. B. I. iii-²²⁷ < ^{E. ramosa}

F. I. iii. 413.

E. Bengal; Tippera.

An erect, glabrous or puberulous leafy annua^l

439. *Centratherum* Cass.

Branching herbs, erect or diffuse; *leaves* alternate, ⁴ ^o ^{led},
 toothed. FZower-heads homogamous; involucre subhemisp ^{fr};
 bracts many-seriate, inner dry or scarious, outer herbaceous ^{often}
 leafy; receptacle flat, naked or pitted, *Calyx-Mmh* short. ^{Petals}

5, connate in equal, regular, slender, tubular corollas; limb Gam-
 Patmlate; lobes narrow. *Stamens* 5, syngenesious; anthers
 obtusely auricled. *Style* with subulate, puberulous arms. *Cypsela*
 obtuse, 8-10-ribbed; pappus short, scabrid, fugacious.

1020. CENTRATHERUM ANTHELMINTICUM O. Kuntze. *Serratula*
anthelmintica F. I. iii. 405. *Vernonia anthelmintica*
 F. B. I. iii. 236; E. D. V. 73.

In most of the provinces.

A tall, robust, leafy annual. Vernac Somraj.

440. Vernonia Schreb.

Herbs or shrubs, sometimes climbing, or small trees; leaves
 alternate, entire or toothed. Flower-heads terminal or axillary,
 solitary, cymose or paniculate, homogamous; involucre ovoid,
 boss, or hemispheric, as long as the flowers or shorter; bracts
 many-seriate, the innermost longest; receptacle naked or pitted
 sometimes shortly hairy. Calyx-lobes of biseriate set*. Petals
 connate in equal, regular, slender, tubular corollas; limb cam-
 pulate or narrow; lobes narrow. Stamens syngenesious;
 anthers with obtusely auricled base. Style with subulate, pube-
 rulous arms. Cypsela striate, ribbed or angled, rarely terete;
 Pappus of many hairs, often girt with a row of outer short hairs or
 flattened bristles.

Heads large, half an inch across or more, few:—

Heads 5-50-flowered, solitary and axillary or few and terminal, sub-
 sessile; achenes silky on, as well as between, the ribs. *teres*.

Heads several, peduncled; achenes glabrous or sparsely hairy:—

Heads 10-15-flowered, in small, short, axillary corymbs; peduncles
 slender; achenes quite glabrous. *Thomson**.

Heads 30-flowered, in rather large corymbs; peduncles stout:—

Achenes quite glabrous. *bracteata*.

Achenes sparsely hairy between the glabrous ribs. *Itoxbunjlm*.

Heads small, under a quarter of an inch across:—

Annual; achenes terete, neither ribbed nor angled. *cinerea*.

Perennial; achenes 10-ribbed, glabrous:—

Bracts of the involucre obtuse. *divergent*.

Bracts of the involucre acute. *lali-gna*.

1021. VERNONIA TERES Wall.; F. B. I. iii. 229.

Behar; Chota Nagpur.

A rigid undershrub with simple, terete stems.

1022. *VERNONIA THOMSONI* Hook, f.; F. B. I. iii. ^{232<}
Chittagong.
A straggling much-branched undershrub.
1023. *VERNONIA BRACTEATA* Wall.; F. B. I. iii- ^{232#}
N. Bengal, Duars.
A rigid, sparingly branched undershrub.
1024. *VERNONIA ROXBURGHII* Less.; F. B. I. iii- ^{2di} *Eupa-*
torium asperum F. I. iii. 415.
Behar; Chota Nagpur.
A rigid, sparingly branched undershrub.
1025. *VERNONIA CINERERA* Less.; F. B. I. iii. ^{233; E} *D.* v. 79.
Serratula cinerera F. I. iii. 406.
In all the provinces.
An erect, rarely decumbent, annual weed. *Beng.* #iik'
• shim, kala-jhira; *Santal.* Darya arak', birlopong »
jhurjhuri. *ct-*
1026. *VERNONIA DIVERGENS* Benth.; F. B. I. m- ^{***}
torium divergens F. I. iii. 415.
Chota Nagpur.
A stout, sparingly branched undershrub.
1027. *VERNONIA SALIGNA* DC.; F. B. I. iii. 235.
Chittagong.
A coarse, leafy undershrub.

441. *Elephantopus* Linn.

liigid herbs; *leaves* alternate or radical, entire ⁰¹ ^{^ ^ j} ;
i'Yozer-heads 2-5-flowered, homogamous ; involucre comp¹ ^{^^}
bracts about 8, dry, stiff, alternately flat and condupUcate ; ^{^^}
tacle naked. *Calyx-limb* bristly. *Petals* 4, connate in^s ^{iobeS}
equally 4-lobed corollas, cleft on one side and with ^{^ ^ l y}
palmately spreading. *Stamens* syngenesious ; anthers £ ^{^^} ^g
auricled at basé. *Style* with subulate, minutely P^{uberulo} ^{Jr} ^{ist} ^{leSr}
Cypsela truncate, 10-ribbed; pappus of rigid, shining
slender throughout or dilated and chaffy below. ^{^*} \.

1028. *ELEPHANTOPUS SCABER* Linn.; F. I. iii. ^{445; *}
iii. 242; E. D. E. 80.

In all the provinces.

A rigid, dichotomously branched, scabrid herb *uti.*
Sawdulun; *Beng.* Samdulun ; *Santal* Manjurj

Hind.

442. *Adenostemma* Forst.

Herbs, glabrous or glandular-pubescent; leaves opposite, Pooled. Flower-heads homogamous, corymbose; involucre Campanulate; bracts many, sub-2-seriate, narrow, herbaceous, sometimes connate; receptacle flat, naked. Calyx-limb annular with few hairs. Petals 5, connate in equal, regular, short-tubed corollas with campanulate limb. Stamens syngenesious; anthers truncate with glandular tip and obtuse base. Style with elongated arms dilated above. Cypsela obtuse, 5-ribbed, glandular; Pappus of 3-5 short, rigid, often clavate hairs set on a shallow ring.

1029. ADENOSTEMMA VISCOSUM Forst; F. B. I. ii. 242. *Ageratum aquaticum* F. I. iii. 415.

In all the provinces.

An erect, rather slender annual. Beng. Buro-keshuti.

443. *Ageratum* Linn.

Erect herbs or shrubs; leaves opposite or the uppermost sometimes alternate. Flower-heads homogamous, corymbose or paniculate; involucre campanulate; bracts 2-3-seriate, linear, subequal; receptacle nearly flat, naked, or with caducous scales. Calyx-limb of free or connate scales. Petals 5, connate in equal, regular, tubular corollas; limb equally 5-cleft. Stamens syngenesious; anthers appendiculate with obtuse bases. Style with long, obtuse arms. Cypsela 5-angled; pappus of 5 short, free or connate, subequal or of 10-20 narrow, unequal scales.

1030. AQERATUM CONYZOIDES Linn.; F. B. I. iii. 243. *A. cordifolium* F. I. iii. 415.

In all the provinces.

An annual herb. Beng. Oochunti.

444. *Eupatorium* Linn.

Herbs, undershrubs or shrubs; leaves opposite, rarely alternate. Flower-heads homogamous, corymbose; involucre oblong, ovoid, campanulate or hemispheric; bracts long or short, few- or many-seriate, subequal or the outer shorter; receptacle naked. Calyx-limb with a row of hairs. Petals 5, connate in equal, slender, tubular corollas; limb 5-lobed or -toothed. Stamens syngenesious; anthers appendaged with obtuse bases. Style with long, obtuse arms. Cypsela truncate, 5-angled or 5-ribbed; Pappus-hairs 1-seriate, numerous, rigid, scabrid.

[Eupatorium.

Flower-heads in lax racemes; leaves lanceolate, the base gradually tapering to a short petiole; margins subentire.

Flower-heads rather closely corymbose; leaves ovate-acuminate abruptly tapering to a distinct petiole; margins coarsely serrate.

- 1031. EUPATORIUM AYAPANA Vent.; F. B. I. 244; E. 490.

Cultivated in C. and E. Bengal.

A herb. Vernac. Ayapana {from its American name)-

- 1032. EUPATORIUM ODORATUM Linn.; F. B. I. in-244,

Cultivated sparingly in C. and E. Bengal.

A coarse herb.

445. Mikania Willd.

Herbs or shrubs, twining or rarely erect; leaves petioled. Flower-heads small, homogamous, usually spicate, racemose, or paniculate; involucre oblong, narrow, with often a smaller outer one; receptacle narrow; Calyx often shortly annular, of connate hairs. Corolla connate in equal, regular, slender, tubular corollas; lobes campanulate, 5-fid. Stamens syngenesious; anthers with obtuse bases. Style with long, acute arms. Cyathium truncate, 5-angled; pappus-hairs many, 1-2-seriate, often covering the base.

- 1033. MIKANIA SCANDENS Willd.; F. B. I. iii-244-

C. Bengal, locally quite naturalised.

A twining herb with long-petioled, opposite leaves.

446. Cyathocline Cass.

Erect, annual, scented herbs; leaves alternate, petioled. Flower-heads small, heterogamous, not rayed, paniculate; disk-florets female, many-seriate, fertile; disk-florets hermaphrodite but usually sterile; involucre hemispheric; bracts sub-lanceolate, acute, with scarious margins; receptacle elevated a contracted base and naked concave top. Calyx-linear of female florets connate in filiform corollas, rather short; style, with 2-toothed limb; of hermaphrodite florets regular tubular corollas, with narrowly campanulate, 5-lobed. Stamens syngenesious; anthers with truncate, entire, or sub-

betgo. (j) Jle in hermaphrodite florets simple or cleft, papillose,
 C_{yv8} ela minufce, obl ong, smooth ; pappus 0.

1034 CYAT HOCLINE LYRATA Cass.; F. B. I. iii. 246.

Behar; W. Bengal; Chota Nagpur; Chittagong.

An annual herb.

p. 447. *Grangea* Forsk.

fid^{er}ΛS> suberefc oi prostrate, villous ; *leaves* alternate, pinnati-
 oPpo - / o Wer n heads heterogamous, not rayed, terminal or leaf-
 s «^{iat} sea, Subglobose > yellow; outer florets female, 1- or more-
 cam e, disk florets hermaphrodite, all fertile; involucre wide-
 con_v PanUlate bracts fe w-seriate, outer herbaceous; receptacle
 floj^{ex} or conical, naked. *Calyx-limb* annular. *Petals* of female
 out⁶¹ C o Unate m filiform corollas, shorter than the styles, the
 her^{er}most with 2-fid, the inner with sometimes 3-4-fid limb; of
 cair^aPhrodifce connate in regular, slender, tubular corollas, with
 obt¹¹¹¹¹Λ6, 4~5^{cl}eft limb. *Stamens* syngenesious; anthers
 cune^{Se} Λ baSG, Style oi hermaP hrodite flowers wifch flaitened,
 Q^{ea}Λ e ari »s, obtuse or with short, triangular, apical appendages,
 fimb^a0 me wh at flattened; pappus cupular, cartilaginous, with

io^Λte or hlearly naked mar g in.

d⁵ - GRANGEA MADERASPATANA Poir.; F. B. I. iii. 247; E. D.
 G- 660. *Artemisia maderaspatana* F. I. iii- 412.

in all the provinces.

A prostrate weed, forming patches 6 in. to a foot wide.

Hind. Mastaru ; *Beng.* Namuti.

448. *Erigeron* Linn.

Annual or perennial herb g| with *leaves* an radical and 1-headed
 scar > 6s, or with slender, erect or decumbent, much-branched
 stem³ Wlth alterna* e leaves. *Floioer-heads* heterogamous, rayed,
 solit^{ary}Λ Or cor y mb ose or paniculate; ray-florets female, 2- or
 mor e-seriate, fertile ; disk-florets hermaphrodite, fertile, or rarely
 sterile; involucre hemispheric or campanulate; bracts sub-
 2- s eriate, numerous, narrow; receptacle nearly flat, naked, or
 occa sionally pitted or minutely paleaceous. *Calyx-Mmh* with
 hairs or bristles. *Petals* of female florets all connate in narrow,
 lig u late corollas, or the inner female florets sometimes filiform
 with subentire limb ; of hermaphrodite florets 5, rarely 4, connate
 in regular tubular corollas, with a very shortly 5-, rarely 4-toothed

[Erigeron

limb. Stamens syngenesious; anthers with entire, flattened bases. Style of hermaphrodite florets with woody arms, with triangular or oblong, apical, acute or obtuse angles. Cypselas compressed, usually narrow, margins often when present, of fewer and shorter setae.

1036. ERIGKRON ASTEROIDES Roxb. ; F. I. iii. 254; E. D. B. 276.

f. B. I.

In most of the provinces.

A coarse annual, 1-2 feet high.

449. Conyza Less.

Herbs; leaves entire, toothed, or less often pinnate. Florets heterogamous, disciform, corymbose rarely solitary; outer flowers female, pale, 2-many-hermaphrodite, yellow, all or mostly fertile; involucre late; bracts 2-many-seriate, narrow, the outermost receptacle flat or convex, naked or pitted and limb bristly. Petals of female florets connate in shorter than the styles, with 2-3-toothed limb, or very outmost cleft on one side above and shortly narrow late; of hermaphrodite florets 5, connate in corollas, with slightly inflated, shortly 5-toothed limb syngenesious; anthers with obtuse, entire base. Hermaphrodite florets with flattened arms, apical appendage late, short or long. Cypselas minute, compressed; pappus 1-seriate, rarely 2-seriate, with the outer setae shorter. Pappus white; stems little branched; bracts of the linear; leaves obovate-spathulate or oblanceolate, the outermost or acutely lobed or cut; achenes glandular. Pappus reddish; stems much branched; bracts of the firm, lanceolate:—

Leaves lanceolate, narrowed to both ends, the margins serrate; bracts of the involucre with scarious glabrous. Leaves from narrow-linear to spatulate-obovate, rarely pinnatifid; bracts of the involucre herbaceous, or fulvous.

1037. CONYZA SEMIPINNATIFIDA Wall. J F, B, I. 257.

E. Bengal; Sundribuns.

A stout-stemmed annual herb,

1038 - CONYZA VISCIDULA Wall.; F. B. I. iii. 258.

Behar; N. Bengal; Chittagong.

1039 n ^ much "Dranc hed, viscidly hairy herb.

• CONYZA STRICTA Willd.; F. B. I. iii. 259. C. irinnatifida r - *• iii. 430.

Behar; Chota Nagpur.

A- fastigiately branched, pubescent herb.

450. Thespis DC.

^ br Ching? abtous, annual herb * leaves alternate, toothed. FloiveX head 8 minute » heterogamous, disciform, yellow, sessile, in Slobo » hermaphrodite florets 4, connate in regular, shortly flOr-et clusters on the branches of dichotomous cymes; outer Se clu sters on the branches of dichotomous cymes; outer herm a ^ an y-seriate, female, fertile, often apetalous ; inner florets 2-Seri a ^ r o d i t e , f e w > s t e r i l e 5 involucre hemispheric; bracts sub-tacle fl ^ Wide, obtuse, herbaceous with scarious margins; recep-Petal at or sli ^ h t l y convex, naked. Calyx-limb subpaleaceous. coroll* of female flore te 0. or connate in very short, tubular tubul as; of hermaphrodite florets 4, connate in regular, shortly Si * n * ar Corollas, with narrowly campanulate, shortly 4-fid limb, nate ^ O ^ > Syn g e n e s i o u s ; anthers obtuse, entire or slightly emargi-acute ^ t y l G of herm a p h r o d i t e f l o r e t s w i t h s h o r t , f l a t t e n e d , s u b - 8 Q l a l l a / l l s » Papillose on the back. Cypsela of female florets about 10, 1, 8 seriate » sh oi % dilated.

THESPIS DIVARICATA DC.; F. B. I. iii. 259.

E- Bengal; Tippera.

A robust weed with spreading branches.

451. Blumea DC.

A led TM l Ual or perennial, glandular-pubescent or woolly herbs; gaj * alter nate, usually toothed or lobed. Flwer-heads hetero-hj * ^ o i f o r m , p u r p l e , r o s y o r y e l l o w , c o r y m b o s e , p a n i c l e d o r h W ^ d r a r e l y k e r n e d ; o u t e r f l o r e t s f e m a l e , m a n y - s e r i a t e ; C a m " f l o r e t s h e r m a p h r o d i t e , f e w , a l l f e r t i l e ; i n v o l u c r e o v o i d o r W l a , h a t e ; b r a c < * m a n y - s e r i a t e , n a r r o w , a c u t e , s o f t o r h e r - C l o u s t e r s t h e o u t e r w a l l e r ; r e c e p t a c l e f l a t , n a k e d . O < f o * - h m b < k f ? ' P e i (i l s o f f e m a l e f l o r e t s c o n n a t e i n f i l i f o r m c o r o l l a s ? ^ v T t h i n t h e i r s ^ l e s , w i t h m i n u t e l y 2 - 3 - t o o t h e d a p e x . ; o f C o ^ P h r o d i f e e ^ r e t s 5 , c o n n a t e i n r e g u l a r ; s l e n d e r , t u b u l a r * * * T * W H h s l i ^ h U v e n l a r s e d 6 t o o t h e d l i m b . S t a m e n s s y n g e - e S l o * * ; anthers sagittate at the base, with small, slender tails.

Style of her»la h
arms, obtuse 0 ? TM ^ * ° " * * * «, flattened or almost filiform
subter6te or an Sled, rfbLT^{108e} on th^o back. C^mela small,
often caducous. , n b b e d < * « * ; p a p p u B J . , ^ , s l e n d e r ,

*Herbs :—[p. 597]

Heads solitary an, l ,
corymbose; flo[^] J * lo^v , receptac - o brous :—
Lobes of the hermaphro...

£^aPPUs reddish; jeave?[?] T[^] hail?[?] . flowe[^] * U[^]olarj^r :-
f^aPPus white; Wyp?[?] Serrate[«] the two uppermost leaves on the
- ^ nchlets o p p o s i t e
hObes of the herm i bifoHata.
Woncled, or f e w ^ ? d i t e ^ rollas glabrous"; "floors' solitary
S^piⁿulose-toothed lymbose J Pappus white; leaves all alternate,
^ ^ n u m e r n c « ^ « M .

†Heads mo
tracted panicles J ^ J J ^ * " » » G d r m dense, oblong spikes or con-
tracted panicles J ^ J J ^ * " » » G d r m dense, oblong spikes or con-
tracted panicles J ^ J J ^ * " » » G d r m dense, oblong spikes or con-

Rule • s t m * « t o m ; f p . ^
« * » * . . i r e g l . a i . 1 - 8 ^ » » e r e c t , s u b s i m p l e j v e r y e a f y . e a v e s
« h e n e s s p a r s e ^ h a " J , 3 a n g l e d . n o t r i b b e d ; l e c e p t a c l e g l a b r o u s ;
t , O m e t i m e s g l a n d u l a r , , , , 8 l e d . n o t r i b b e d ; p u b e s c e n c e s i l i y ,
C o i l l a y e l l o w : _ , " e v e r s > ^ 7 J i ^ * t f « « .
leaves elongate, M
t o o t h e r ; P u b e s c e n c e e o l a r e i o r " ^ " - a c u m i n a t e , m i n u t e l y
" " " l e d a x i j J a r y a n ^ v e r y - s i i t y . , h e a d s g r e y , s i l v e r y , i «
^ o f h e r m a p h r o d i l m i n a i o l u s i < * s ; r e c e p t a c l e g l a b r o u s ;
^ W >> o a d l y o b 7 ; e C O r o l l a t e , b h a i r y ; a c h e n e s s i l k y ... « n V « ^ .
P ^ e s c e n c e , n e v e r s i l v e r y - ! . " 0 " 8 o r e i p t i C l c o a l s e l y " O o t h e r ;

ax « Wy " I l u s ^ f j f " " a * t o t h e i n v o l u c r e , i n s m a l l , s e s s i l e ,
i n c h e d s t e m • w o n g t h e s t e n d e r b r a n c h e s o f t h e m u c h -
" P P e r o b l o n g i n e i s K , e r l e a v e s s e " a t e o r l y r a t e - p i n n 8 . « « < < J .
" a p h r o d i t e c o r o l l a - h " . l e c e p (a c l e P u b e s c e n t ; l o b e s o f h e i -
g a b r o u s o r h a i r y - a r y : a c h e n e s d i s t i n c t l y 8 - 1 0 - r i b b e d .
« e a d s w i t h g r e y i s ' g b S u m i a -

termi » al panicles l ^ T * o t h e i n v o l H C , e . E l e c t e d i n d e n s e
o r s < > w e t i t t e s (i n ' B ' 7 " o r y m b o s e a t t h e a p e x o f ' h e s i m p l e
l e a v e s s p a i n g i y b r a n c h e d s t e m ; l o w e r
W r ^ e . p i ' , , 3

ut no
y P " u a h f i d ; r e c e p t a c l e g l a b r o u s , l o b e s o f
s t e n d e r p r e t i m e s o f U S o r n a m i n a h e s f i n e d
t t e a t d a n , l a r e , f ' a l w a y s T e i 7 l e a l ? ! p u b e s c e n t ,
g l a b r e s c e n t ; l o w e r l e a v e s t o o t h e d

or serrate, rarely lobulate, upper toothed; **achenes glabrate,**
 subtetragonous **lacera.**
 Stems always simple, with few leaves, **often** ^ ^
 densely villous or silky; achenes hairy. ^ .> **lla**
 Heads in open corymbs or panicles with divaricate branches, **ego.** _
 always yellow; achenes always 8-10-ribbed, more or less hairy.

[P. 596]

Stems branched from the base; pubescent or laxly **tose herbs,** ^
 with the lower leaves runcinate, lyrate, or subpinnatifid; **bracts of**
 involucre **erev-ereen** • — ± -u

W e s on upper part of stem few, large, laciniate; receptacle
 Pubescent; lobes of hermaphrodite corolla hairy; ^ " ^ f ^ .

Leaves on upper part of stem i W . ^ ^ ; . 1 ^
 glabrous; lobes of hermaphrodite corolla glandular, achenes
 beset with spreading hairs. " **membranacea.**

Stem simple below, branched above; a villous herb with, **spu** **ading**
 soft hairs, the lower leaves obovate, lanceolate, **coarsely** **irregularly**
 serrate, upper toothed or lacerate; bracts of **involuc** ^ **coloured ;**
 receptacle pubescent; achenes silky. " **quemontii.**

Shi > * » or small trees; flowers yellow; pappus red; heas **man** - .
 y .

[P. 596]

A ^ rub, with stout, glabrous or puberulous branches; **leaves papery,**
 glabrous, oblanceolate, acuminate. **myriocephala.**
A small tree, with stout, villous, or silkily woolly stem **and branches;**
 leaves coriaceous, silkily woolly, elliptic- or oblong-lanceolate, **J** * '
short; usually auricled petiole **balsa** **era:**

1041. BLUMBA AMPLECTBNS DC.; F. B. I. iii. 260.
 C Bengal; Sundribuns.

A small bushy herb.

1042. BLUMEA BIFOLIATA DC.; F. B. I. iii. 261. *Conyza* **bifoliata**
 F. I. iii. 431.

C. Bengal.

A small bushy herb.

1043. BLUMBA OXYODONTA DC.; F. B. I. iii. 266.
 " In all the western and northern provinces.
 A slender decumbent herb.

1044. BLUMEA WIGHTIANA DC.; F. B. I. iii. 261.
 In all the provinces.
 An erect herb.

1045. BLUMEA SERICANS Hook. f.; F. B. I. iii. 262.
 Chittagong.
 A tall robust herb.

- 1(H6. BLUMEA GLOMERATA DC. ; F. B. I. iii. 262.
fistulosa F. I. iii. 429.

Conyza

In all the provinces.

An erect, rather slender, much-branched herb.

1047. BLUMEA LACERA DC.; F. B. I. iii. 263 ; E. & B. 546.
Conyza lacera F. I. iii. 428.

In all the provinces.

An erect herb. *Hind.* Kukkurbanda; *Beng.* Kukur-sunga, bara-suksung, bara-koksing.

Kukur-

1048. BLUMEA HIERACIFOLIA DC.; F. B. I. iii. 263.

Chittagong.

A robust or slender, simple herb, with often scape-stems.

like

1049. BLUMEA LACINIATA DC. ; F. B. I. iii. 264. *Conyza lacim*
F. I. iii. 427.

fa

In all the provinces.

• A tall erect herb.

1050. BLUMEA MEMBRANACEA DC; F. B. I. iii. 265, *Conyza*
diffusa F. I. iii. 429.

Conyza

In all the provinces.

A tall, erect, usually much-branched herb.

1051. BLUMEA JACQUEMONTII Hook. f ; F. B. I. iii- 265.

Chota Nagpur.

A tall coarse herb.

1052. BLUMEA MYRIOCEPHALA DC.; F. B. I. iii- 269 < *Conyza*
lanceolaria F. I. iii. 432.

Conyza

Chittagong.

A shrub, stems as thick as a finger.

1053. BLUMEA BALSAMIFERA DC. ; F. B. I. iii. 270; E. D. 3, *Conyza*
balsamifera F. I. iii. 427.

Conyza

Tippera; Chittagong.

A small tree-like shrub. *Hind.* Kakarónda.

452. Laggera Sch.-Bip.

Annual or perennial herbs; leaves alternate, often rigid and decurrent. Flower-heads heterogamous, disciform, panicled or axillary; outer florets female, many-seriate, hermaphrodite, many-seriate ; all fertile ; involucre campanulate ; bracts many-seriate, narrow, often rigid, the outer shorter ; receptacle flat, naked. Calyx-Muxh setose. Petals of female florets

Pl. uchta.]

COMPOSITE.

innate in filiform corollas, with minutely toothed monthr of her-
 approdite 5; connate in regular, slender, tubular corolla[^] with
 5-10 enlarged filiform limb. *Stammus* *ty y^ T ?T' ? ^ -*
 ^Jobed or sajtate at base, but not tailed. Style J J ^
 te florets with flattened or almost filiform arms *Cupseia*, often
 aubtereto or angled, ribbed or not; pappus 1-sciate, slenac ,
 ^aducous.

^orets yellow ; stems very slender, not winged ; leaves half-em iacmg
 J5^o stem at their base.....nv'iess whiged ;
 ^lo-i-ets purplish or pink; stems rather robust, more 01 less g
 eaves decurrent on the stem at their base :— ...*alata*.

Leafy wings of the stem all entire and continuous ..>.....
 Leafy wings of the stem not entire and continuou.,: toothed, ^ ^
 Wings extending throughout the stem but deeply... pterodonta-
 interrupted ; leaves entire at base.....••*, """" auriled at
 Wings very shortly decuvrent from the leaves, which TM ^d " ^
 the base

1054. LAGGERA KLAVA Benth.; F. B. I. iii- TM'
 In all the provinces.
 A slender herb, 6 in. to 3 feet high. .. *alata*

1055. LAGGERA ALATA Sch.-Bip.; F. B. I. m- 271. ^n,jza
 F. I. iii. 430.
 N. Bengal; Chota Nagpur.
 A stout leafy herb. ...

1058. LAGGERA PTERODONTA Benth. ; F. B. I. m. -*'1-
 Chota Nagpur, rare.
 A slender herb. . r -P n T G5

1057. LAGGERA AURITA Sch,Bip.; F. B. I. iii. 2<1; E. D. L. 0).
Conyza aurita F. I. iii. 428.
 In all the provinces.
 A slender herb.

453. Pluchea Cass.

Sh^S) rare,y herbs, tomentose or glutinous ; *Umm a >> e*
 ^Wer-heads heterogamous, disciform, white, y***> or lilac,
 • a * , in tenninal leafless corymbs o r large and^sub o^Waj r ^ Quter ^
 florets female, many-seriate, fertile; inner florets he: rima P ^
 [ew, sterile; involucre ovoid or campanulate; biact, ovate, sually ^
 bfoad, dry, rigid; receptacle flat, naked. W " i'imb setose ^
 ^<rf. of female florets connate in filiform corollas, shorter than

their styles, 8-fid or minutely toothed at the apex ; of hermaphrodite florets 5, connate in regular tubular corollas, with slightly enlarged 5-fid limb. *Stamens* syngenesious ; anthers with sagittate bases, the cells tailed. *Style* of hermaphrodite florets with filiform, entire or 2-fid arms. *Cypsela* small, 4-5-angled ; papp^{uS}-hairs slender, 1-seriate, rigid, free, or in sterile florets many and connate.

1058. PLUCHKA INDICA Less; F. B. I. iii. 272; E. P. P. ⁹⁶¹ⁱ

***Conyza corymbosa* F. I. iii. 426.**

Sundribuns.

A low shrub, growing in salt marshes and mangrove swamps. *Bcng.* Munjln rukha, kukronda.

454. *Epaltes* Cass.

Herbs; *leaves* alternate, usually decurrent. *Flower-he*^ heterogamous, disciform, small, solitary or corymbose; outer florets female, many-seriate, fertile; inner florets hermaphrodite, very few, usually sterile ; involucre broadly campanulate or hemispheric ; bracts many-seriate, dry, rigid ; receptacle flat or convex and raised, naked. *Calyx-limb* 0. *Petals* of female florets connate in filiform corollas, shorter than their styles, sometimes subcartilaginous below, minutely 2-3-toothed at the tip; of hermaphrodite connate in regular tubular corollas, with slightly enlarged or campanulate 3-5^fid limb. *Stamens* syngenesious;; anthers sagittate at base, minutely auricled, auricles connate, tads small. *Style* of hermaphrodite florets subulate, entire or 2-fid. *C-ypsel*a of female florets subterete, 5-10-ribbed ; pappus 0; °t hermaphrodite usually abortive, with or without 2-3 caducous pappus-hairs.

1059. EPALTES DIVARICATA Cass.; F. B. I. iii. 274.

Orissa; sand-dunes near margin of Chilka lake.

An annual, diffuse, glabrous herb.

455. *Sphaeranthus* Linn.

Low annual herbs with spreading branches; *leaves* alternate, toothed, decurrent. * *W r - h e a d s* small, heterogamous, disciform, m terminal, solitary, globose clusters, with usually an involucre of a few empty bracts, sessile on a common receptacle and bracteate or not; outer florets few or many, female, fertile, inner solitary or tew, hermaphrodite, fertile or sterile; involucre narrow; bracts

narrow, ^{te, ^ry, une(qual} 5 receptacle small, naked. 'Calyx-
 limb ^{oys olete*} Petals of female florets connate in filiform,
 minute ^{l 2~3-toothed} corollas; of hermaphrodite florets connate
 in regular ^{lar} corollas, with thickened tube and 4-5-toothed limb.
 or tail ^{u ^svn} Sene sious; anthers sagittate at base; auricles acute
^{e ^ar} Style of hermaphrodite florets with filiform arms, or
^e Cypselæ oblong, subcompressed; pappus 0.
 Clusters of ^{h A} small on glabrous peduncles with entire wings; bracts
 of the ^{eacls} small on glabrous peduncles with entire wings; bracts
 clusters of ^{mVOUCle SCarius} often jagged at tips *africanus*.
 bracts of ^t heads larger on pubescent peduncles with toothed wings;
 106 ^{o*} SPHERANTHUS AFRICANUS Linn.; F. B. I. iii. 275. *S. indi-*
ces F. I. iii. 446.

C and E. Bengal; Sundribuns.

1061. [^] slender, usually glabrous herb; in swamps.
 SPHERANTHUS INDICUS Linn.; F. B. I. iii. 275; E. D.
 S. 2518. *S. mollis* F. I. iii. 446.

In all the provinces.

A villous weed; common in rice-fields. *Hind.* Mundi;
Beng. Ghork-mundi, chaggul-nadi, murmuria; *Scmtal.*
 Belaunja.

456. Athroisma DC.

^A ^{Peiii} ^{l 801} [^] glabrous or pubescent annual; leaves alternate,
 for ^m [^] ^{Pmna*} ^m ^d Flower-heads small, heterogamous, disci-
SM [^] globose or ovoid > terminal, peduncled clusters that are
 Ver ⁱ on a common cylindrical receptacle; outer florets female,
 involu ^{6W} ^{inner} ^{^ore} ^{^s} hermaphrodite, very numerous, all fertile;
 broad ^{dr} [^] paleaceous bracts; receptacle cylindrical, with
 the fl [^] [^] [^] involucre but longer, enclosing
 nate ^{owers} ^{Cft} [^] limb annular. Petals of female florets con-
 floret ⁴ [^] ^{filiform} ^{corollas} >> 2-3-toothed ap; apex; of hermaphrodite
 short ⁴ ^{connat} e in regular tubular corollas, with campanulate,
 4-lobed limb. Stamens syngenesious; anthers with sagit-
 floret ⁶ ^{auricles} ^{con} ^{nate}, acute. Style of hermaphrodite
 with ^{With} ^{Short} > flattened >> very obtuse arms - Cypselæ black,
 a [^] convex outer and flattened inner face, margin ciliate; pappus
 snort, stellately spreading, fimbriate corona.

1062. ATHROISMA LACINIATUM DC.; F. B. I. iii. 276.

Behar; C. and E. Bengal.

A viscid annual weed.

457. *Gnaphalium* Linn.

Hoary or woolly herbs; *leaves* alternate, quite entire. ^{plow^{er}}
 heads small, heterogamous, disciform, in terminal or axillary ^{xilla[^]}
 corymbs or fascicles; outer florets female, 2- or more-seriate ^{eriat[^]}
 inner fewer, hermaphrodite, all fertile; involucre ovoid ^{oid[^]}
 panulate; bracts many-seriate, all scarious, or with a ^{hite[>]}
 yellow, or brown, more or less scarious lamina; receptacle ^{n^{^^}}
 or pitted. *Calyx-limb* setose. *Petals* of female florets ^{te[^]}
 filiform corollas, 3-4-toothed at apex; of hermaphrodite ^{tg^{5?}}
 connate in regular, slender, tubular corollas, with dilated, o- ^{cell^g}
 limb. *Stamens* syngenesious; anthers with sagittate base ^{nca[^]}
 with slender tails. *Style* of hermaphrodite florets with true ^{ppus-}
 or capitate arms. *Cypselas* oblong or obovoid, smooth; ^{at base,}
 hairs 1-seriate, slender or thickened at tip, connate or not
 caducous.

Heads in leafless, corymbose clusters:—

Stems usually many from the root; heads golden-yellow ^{multiceps.}
Uteo-album var.

Stems corymbosely branched above; heads pale brown ^{luteo-album var. pallidum.}

Heads leafy:—

Heads arranged in simple or branched leafy spikes ^{indiu^{UILL}}

Heads in rounded axillary or terminal leafy clusters:— ^{v^olud^e}
 Densely woolly; leaves small, spatulate; bracts of the involucre ^{bract^m}
 lanceolate, green with straw-coloured tips. ^{Pⁿ} ^{inccul;}
 Sparingly cottony; leaves obovate-spatulate, rather large. ^{<<^{^^}}
 bracts of involucre broadly oblong, with glistening ^{h^ht[^]} ^{ol[^]} ^{tf^{U,i}}
 coloured tips. ^{...y^{iac}}

1063. GNAPHALIUM LUTEO-ALBUM Linn. var. MULTICEPS

iii. 288; E. D. G. 302. *Q. orixense* F. I. iii-425*

Chota Nagpur; Orissa.

An annual weed.

1063/2. Var. PALLIDUM F. B. I. iii. 288; E. D. G. 302. *O. luteuin* F. I. iii. 425.

In most of the provinces.

An annual weed.

1064. GNAPHALIUM INDICUM Linn.; F. 13. T. iii. 289. *G. multicaulis* F. I. iii. 424. *G. multicaule* F. I. iii. 425.

In all the provinces,

A slender cottony weed.

1^{o65} > GNAPHALIUM PULVINATUM DC.; F. B. I. iii. 289. *G. de-
Pressum* F. I. iii. 425.

In the western and northern provinces.

106fi A^{dec}umbent cottony weed.

6- GNAPHALIUM FLACCIDUM Kurz ; F. B. I. iii. 290.

N: Bengal:

A flaccid, green, annual weed.

458. Csesulia Roxb.

A glabrous marsh-herb; *haves* alternate, serrulate. *Floiuer-
heads* in sessile axillary, involucrate balls, each sessile on a broad,
convex common receptacle, and each 1-flowered; involucre bracts
opposite, keeled or winged, ultimately adnate to and enclosing
the cypselas. *Calyx-limb* obsolete. *Petals* 5, connate in a tubular
corolla with deeply cleft, campanulate limb. *Stamens* syngen-
esious; anthers with sagittate base; tails branched. *Style* with
four linear-cuneate subtruncate arms. *Cypselas* included in the
laciniate rays; compressed bracts; pappus 0.

7< CASULIA AXILLARIS Roxb.; F. I. iii. 448 ; F. B. I. iii. 291.

In all the provinces.

A glabrous marsh herb.

439. Yicoa Cass.

Annual or perennial, glabrous or hairy herbs; *leaves* alternate,
entire or toothed, upper stem-clasping. *Flower-heads* hetero-
gamous and rayed, or from absence of ray homogamous and disci-
fiform; verticillate solitary or on leaf-opposed peduncles, woolly ;
outer ray-florets when present 1-2-seriate, female, disk-florets
numerous, hermaphrodite, all fertile; involucre campanulate;
bracts numerous, narrow, inner scarious, outer shorter, her-
maphroditous margin; receptacle flat or subconvex,
narrowly regular, calyx-limb setose. *Petals* of ray-florets connate,
irregularly 2-3-toothed; of hermaphrodite florets 5, connate
limb. *Stamens* syngenesious; anthers with sagittate base ; tails
entire. *Style* of hermaphrodite florets with flattened arms,
broader upwards > obtuse or truncate. *Cypselas* small, hardly
rKK - > tip rounded; pappus-hairs 5-many, 1-seriate, smooth or
s - > abrid, sometimes mixed with small, chafly scales.

¹Wl. PULICARIA ANGUSTIFOLIA DC.; F. B. I. iii. 299.

Chota Nagpur.

A softly pubescent annual.

461. Emilia Gass.

Annual or perennial herbs, often glaucous, glabrous or hairy ;
^{ra}leaves crowded, petioled, entire, toothed or lyrate-pinnatifid;
^cauline few, stem-clasping. *Flower-heads* homogamous, disciform,
 yellow or red, long-peduncled, solitary or laxly corymbose, not
^{br}bracteate at base ; florets all hermaphrodite, fertile ; involucre
^ocylindric; bracts 1-seriate, equal, free or connate, striate; recep-
^{ta}cle flat, naked. *Calyx-limb* setose. *Petals* connate in tubular
^{co}corolla, with long, cylindric limb, slightly 5-fid at the apex.
^{vn}anthers syngenesious; anthers with subobtusate, entire bases.
^{fy}style with subterete arms, tips short obtuse, or long acute.
^LVP**style* subterete, or angled and 5-ribbed; pappus-hairs copious,
^{wh}white, soft, slender.

¹072. EMILIA SONCHIFOLIA DC.; F. B. I. iii. 336. *Cacalia son-*
chifolia F. I. iii. 413.

In all the provinces.

A glabrous weed. *Beng.* Sadi-modi.

462. Senecio Linn.

Herbs, undershrubs or shrubs; *leaves* radical or alternate,
 entire or variously divided. *Flower-heads* heterogamous, usually
 yellow» solitary, corymbose or racemose; outer florets rayed,
^{fe}female, rarely 0; disk-florets hermaphrodite, all fertile ; involucre
^{va}various; bracts 1-seriate or sub-2-seriate, equal, erect, free or
^econnate at base, with few or many, very short outer ones ; recep-
^{ta}cle flat or convex, naked, pitted, or fimbriate. *Calyx-limb*
 setose. *Petals* of ray-florets connate in ligulate corollas, the blade
^{lar}large or small; of hermaphrodite florets connate in regular tubular
^{or}corollas, with a narrow, shortly 5-toothed, or a campanulate,
 2-cleft limb. *Stamens* syngenesious; anthers obtuse or auricled
^{or}or minutely tailed at base. *Style* of hermaphrodite florets with
 recurved arms, tips truncate and penicillate, rarely rounded, or
^hwith a short, narrow point. *Cypella* subterete, or those of outer
 florets dorsally compressed, 5-10-ribbed ; pappus-hairs copious or
 sparse, soft, white, smooth, scabrid or bearded.

[Senecio.

- Disk-florets with a campanulate limb; leaves irregularly lobulate or toothed; bracts of the involucre oblong, acute, puberulous.....
 Disk-florets with a slender tubular limb ; leaves pinnatifid ; involucre linear-lanceolate ; achenes scabrid

1073. *SENECIO NUDICAULIS* Ham.; F. 33. I. iii. 340.

Chota Nagpur; N. Bengal, Duars.

A slender or stout, usually scapigerous herb,
3 feet high.1074. *SENECIO TETRANDRUS* Ham.; F. B. I. iii. 341.

N. Bengal, Duars.

A weak, straggling weed, 4 to 8 in. high.

463. *Flaveria* Juss.

Glabrous or minutely pubescent herbs; leaves or toothed, narrow. *Flower-heads* heterogamous, with and few hermaphrodite florets, or homogamous with hermaphrodite florets, or occasionally with a solitary hermaphrodite floret, all fertile: narrow, sessile, secund cymes or fascicled, floral leaves sometimes involucre, of 2-4 elongated, subequal bracts, with occasionally outer; receptacle small, naked. *Calyx-limb* obsolete. female florets connate in ligulate corollas, with small, hardly as long as their styles ; of hermaphrodite connate tubular corollas, with turbinate-campanulate, 5-fid hairy syngenesious; anthers with entire, obtuse bases. hermaphrodite florets with truncate arms. *Cypsela* oblongi raised ribs ; pappus 0.

1075. *FLAVERIA REPANDA* Lagasc.

W. Behar, rare.

An introduced weed; slowly spreading eastward the Deccan, where it is now common.

464. *Tagetes* Linn.

Herbs erect or diffuse, glabrous, with often oil-glands and leaves; leaves opposite, pinnately divided, rarely serrulate. *Flower-heads* heterogamous, rayed ; ray-florets female ; disk-florets hermaphrodite, fertile; sometimes solitary ray-floret, rarely ray-florets quite absent and heads gamous, florets fertile: small or large, long peduncled

to involucre cylindrical; bracts 1-seriate, equal, connate
 midle or beyond, occasionally with a solitary outer bract;
 flat, naked or pitted > nimbriate. Calyx-limb pale-
 accous. of ray-florets connate in a ligulate corolla, with
 in spreading, entire or 2-lobed lamina; of hermaphrodite connate
 & tubular corollas, with a usually enlarged, 5-fid limb.
 of the syn- gonesious; anthers with obtuse, entire bases. Style
 shorter hermaphrodite florets with slender > truncate, and penicillate or
 commonly appendaged arms. Cypsela linear, narrowed at base,
 call Pr68Se<1 or ang<lar, hardly striate, with conspicuous, basilar
 us 5 pappus of few, usually 5-6, aristate or truncate scales.

10 76% TAGETES PATULA Linn.; E. D. T. 17.

In all the provinces; cultivated, but often also as an escape.

A showy-flowered annual. Beng. and Hind. Genda; Uriya Gendu.

465. Xanthium Linn.

alt miUa* coarse herbs, unarmed or with 3-fid spines; leaves
 alternate, toothed or lobed. Flower-hesAs monoecious, female
 sterile, the fertile, and hermaphrodite, globose, many-flowered,
 head short; bracts few, 1-2-seriate, narrow; receptacle cylindrical
 with pale enclosing the flowers; involucre of female head
 with the bracts connate as an ovoid, 2-beaked, herbaceous utricle
 with 2 flattened cells, clothed with hooked bristles, and sometimes
 a few small, free, outer bracts. Calyx-limb obsolete. Petals
 of female florets 0; of hermaphrodite florets 5, connate in a tubular
 corolla, inflated, 5-toothed limb. Stamens of hermaphrodite
 with monadelphous filaments and free anthers, bases of
 dit obtuse > p's inflexed, mucronate. Style of hermaphro-
 dite florets slender, simple; of female with free arms exerted from
 involucre. Cypsela enclosed in the hardened involucre cell,
 obovate, thick; pappus 0.

- Stems unarmed.....strianariuin.
- Stems armed with numerous 3-fid spines.....spinotuta.

10?7. XANTHIUM STRUMARIUM Linn.; F. B. I. iii. 303; E. D. X. 1.
 -X. indicmn F. I. iii. 601.

In all the provinces.

[Xanthium.

A coarse, unarmed annual, with bur-like heads.

Vernac.

Chhota-gokhru, ban-okra.

1078. XANTHIUM SPINOSUM Linn.

C. Bengal; occasional in waste places.

A rather rigid, much-branched, spiny annual, with bur-like heads. A native of Southern Europe, recently introduced.

466. Lagascea Cav.

Rigid, villous, scabrid or subglabrous herbs; the upper alternate. *Flower-heads* in leafy balls, solitary, terminal, and peduncled, or in corymbose 1-flowered; florets hermaphrodite, fertile; involucre connate bracts; receptacle minute. *Calyx-limb* irregularly elongated, 5-lobed. *Petal* 5, connate in a shortly tubular corolla, cylindrical or dilated, 5-fid limb. *Stamens* syngenesious, with sagittate, obtusely auricled bases. *Style* with acute, hairy arms. *Cypsela* cuneate, compressed or tip rounded; pappus a toothed or fimbriate cup or sometimes bristles at the angles of the achene.

1079. LAGASCEA MOLLIS Cav.; F. B. I. iii. 302.

C. Bengal.

An introduced weed of cultivated places.

467. Zinnia Linn.

Annual or perennial herbs or undershrubs; leaves quite entire. *Flower-heads* heterogamous, rayed, female, 1-seriate; disk-florets numerous, hermaphrodite, fertile; heads large or medium, peduncled at ends or in cymes, usually thickened near top; involucre campanulate or subcylindric; bracts 3- or more-seriate, imbricate, dry, becoming gradually shorter from within outwards, conic or ultimately cylindrical, paleaceous. *Calyx-limb* 5-lobed, regular tubular corollas, with a slightly enlarged, cylindrical 5-lobed limb. *Stamens* syngenesious; anthers entire. *Style* with elongated, obtuse or subtruncate arms, hairy. *Cypsela* narrow, striate, compressed or 3-quetrate or with the angles produced into 1-3 aristate teeth.

1/x
1080 yr

* «jn* U PAUCIFLORA Linn.

s gardens in every province, but occasionally also
Paging up spontaneously.

Aroid
o. annual. *Zinnia clegans*, another species com-
mon in gardens, does not show the same tendency to
come up spontaneously.

Herbs, 1

468. Siegesbeckia Linn.

heads heterogenous; *Ular* PUBESCENT; *Imves* OPPOSITE, toothed. *Flotver-*
female, 1-s *o* ?ainous, subradiate, yellow or white; ray-florets
the ^ner' ^i te, fertile J disk-florets hermaphrodite, fertile or
heULispheri in *ea*y P anicles 5 involucre campanulate or
sPat]luiate, or jr ac ^ s few, herbaceous, glandular, outer usually 5,
Small with Spreading, inner enclosing the ray-florets; receptacle
***etals* of r ^embranous, concave pales. CaZj^ - limb obsolete,
limb or a s fy . . o ets connate in short-tubed corollas, with 2-3-fid
regular tub 7* broad ligUle . of herma P hrodite florets connate in
toothed limb lar Corollas > with campanulate 5-fid, or narrow 3-4-
Style of h , Stamens syngenesious; anthers with entire bases.
arms - C - e TM aphrodifce florets with short, flattened, subacute
Pappus 0 JPSeCa ob ovoid-oblong, often incurved; apex obtuse;

1081

SIEGESBECKIA OMENTALIS Linn.; F. I. iii. 439; F. B. I.
iii, 8⁰⁴ - 8 - *trachiata* F. I. iii. 439.

^hota Nagpur.

A g^ndular-pubescent herb.

469. Enhydra Lour.

Glabrous or scaberulous marsh-herbs; leaves opposite, sessile.
Flower-head s axillar > r, subsessile, or in alternate axils, hetero-
gamous, s U radiate, ray-florets female, many-seriate, fertile;
disk-flores fc n V ^ 61 * 11181 ^ 1 * 11 ^ fertile, or inner sterile; involucre of
4 foliace O tra ots in o P P site Pairs, the two outer larger; recep-
tacle convex or concave; a es enclosing the flowers, tipped with
glandular hairs, Cal V x Jim ^ obsolete. Petals of ray-florets con-
nate in corollas, shorter than their styles, with short, broad, 3-4-
lobed limb of herina P hrodite florets connate in regular tubular
corollas with a cain P anulate 5 - fid limb. Stamens syngenesious;
anthers with obtuse » entire base. Style of hermaphrodite florets
with obtuse arms hispid at the tips. *Cypsela* oblong, enclosed in

the rigid pales, outer dorsally, inner sometimes laterally compressed; pappus 0.

1082. ENHYDRA PLUCTUANS Lour.; F. B. I. iii. 304; E. D. B. 213-

Hingsha repens F. I. tri. 448.

C. and E. Bengal.

A glabrous marsh-herb. *Hind.* Harhūch; *Bengf.* Hingcha.

WO. *Eclipta* Linn.

Annual herbs, strigose or hirsute; *leaves* opposite. *Flower-*
heads small, axillary or peduncled, heterogamious,
 rayed; ray-florets female, sub-2-seriate, fertile or sterile; disk-
 florets hermaphrodite, fertile; involucre wide-campanula;
 herbaceous, the outer larger and broader;
 receptacle flat or slightly convex; pales enclosing several flowers,
 inner narrow or 0. *Calyx-limb* truncate or aristate. *Petals* of
 ray-florets connate in a short entire, or
 toothed ligule; of hermaphrodite florets connate in regular
 tubular corollas, with shortly 4-5-lobed limb. *Stamens*
 syngenesious; anthers with obtuse, subentire bases. *Style* with
 flattened arms with short or triangular obtuse appendages
 of ray-florets triquetrous, often empty; of disk stouter,
 laterally subcompressed; apex entire, toothed or 2-aristate.

1083. ECLIPTA ALBA Hassk.; F. B. I. iii. 304; E. P. E. 7-

h. prostrata F. I. ia. 438.

In all the provinces.

A slender, diffuse or suberect weed. *Hind-* Moch,
 kand, bhanga, babri; *Beng.* Kesari, kesuti; *Vr***
 Kesarda; *Santal.* Lai kesari.

Wi. *Blainvillea* Cass.

Scabrid or villous herbs; *leaves* opposite or the upper alternate,
 petioled, toothed. *Flower-heads* small, subsessile or peduncled.
 terminal or axillary, heterogamious, rayed or subdisciform; outer
 florets female, 1-2-seriate, disk-florets hermaphrodite, all fertile;
 involucre broadly ovoid or subglobose; bracts few, outer her-
 baceous, inner gradually passing into the rigid, membranous,
 concave scales of the small convex receptacle.
 limb setose. *Petal* of female florets connate, 2-3-toothed
 ligules, obsolete; of hermaphrodite florets connate.

re 1
 ne ^ ^ tubular cor ◊ Has, with dilated, 5-fid limb. *Stamens* syngedite fl^(US) antbers with entire obtuse bases. *Style* of hermaphrodite fl^(US) eiis Wlt; h narrow, flattened arms, with acute or subobtuse[^] append^aes* *Cypsela* truncate, of ray-florets 3-quetrous or dorpre ^ Com Pressed, of disk-florets 3-4-angled or laterally compressed. Papp^{us} of 2-5 unequal bristles connate at the base.

4- BLAINVILLEA LATIFOLIA DC.; F. B. I. iii. 305. *Verbesina Lavenia* F. I. iii. 442.

Chota Nagpur.

A rigid, hispid weed, 1-2 feet high.

472. *Wedelia* Jacq.

Scabrid, Pubescent, or hirsute herbs or shrubs, sometimes sea A nent, leaves opposite. Flowers in heads axillary or terminal, herma¹¹¹⁰¹¹⁸ rayed, ray-florets female, fertile; disk-florets la* P^{nr}o^odite, fertile, or the inner sterile; involucre campanul^(sut)enⁿispheric; bracts sub-2-seriate, outer 3-5 usually enclosing the flowers. *Calyx-limb* obsolete or annular. *Petals* of ray-florets connate in a corolla, with spreading, entire, or 2-toothed ligule of herm^a P^ro^cu^e florets connate in regular tubular corollas, with 5-toothed limb. *Stamens* syngenesious; anthers With entire or subs^aittafce base. *StyU oi* hermaphrodite florets acute arms, hirsute at their tips. *Ctwsela* cuneate-oblong or ooid ih' i' i
 outer cnicK, smooth or tubercled, laterally compressed or the pappu^{ue}trous, tip rounded, margins obtuse or thickened; with 1 or a toothed cup or ring, or sometimes of short scales occasionally a few bristles.

- Achenes truncate at the tip :—
 Leaves not 3-nerved; inner bracts of the involucre narrowed and distinct^{ly} Pointed; a prostrate herb.....*calendulacea*.
 Leaves 3-nerved; inner bracts of the involucre subobtuse; a large littoral climber.....*scandens*.
 Achenes contracted at the P; leaves 3-nerved; inner bracts of the involucre subulate; a suberect herb.....*Wallichii*.

1085. WEDELIA CALENDULACEA Less.; F. B. I. iii. 306; E. D. W. 25. *Verbesina calendulacea*, F. I. iii. 440.

C and E. Bengal.

A procumbent herb, growing in wet places. *Hind.* Bhangra; *Beng.* Kesaraj, bhimraj.

1096. WBDELIA SCANDENS Clarke. *W. biflora* F. B. I. iii. 308.
Verbesina scandens F. I. iii. 441.

Sundribuns.

A large shrubby climber, near the sea-coast.

1087. WEDELIA WALLICHII Less.; F. B. I. iii. 307. *Verbesina*
biflora F. I. iii. 440.

Chota Nagpur.; N. Bengal, Duars.

A weed of grassy places.

473. Tithonia Desf.

Large robust herbs, with shrubby, perennial base; *leaves* alternate, petioled, entire or 3-lobed. *Flower-heads* large, long, thickened peduncles, heterogamous, rayed; ray-florets neuter; disk-florets hermaphrodite, fertile; involucre hemispherical or wide-campanulate; bracts 2-seriate, slightly unequal, rigid striate, close-set below, wider and leafy above; receptacle pappus folded, striate, aristate, embracing the flowers. *Calyx* 5-lobed, aristate. *Petals* of ray-florets connate large, spreading, entire or somewhat 2-toothed, yellow; of disk-florets connate in regular tubular corollas; tube slightly truncated above the base, villous; limb elongated, cylindrical, 5-toothed. *Stamens* syngenesious; anthers with entire base. *Style* of hermaphrodite florets with arms ending in linear-lanceolate, pubescent, villous appendages. *Cypselas* oblong, compressed, 4-angled, with pappus of 2 aristae, deciduous or persistent, with numerous membrane, persistent scales.

1088. TITHONIA TAGETIFLORA Desf.

In most of the provinces, cultivated.

A large, shrubby "Sunflower," the leaves smelling of camphor; very rarely propagating itself spontaneously by seeds, but readily doing so by its rootstocks.

474. Helianthus Linn.

Annual or perennial herbs, often tall; *leaves* opposite or upper or all alternate, entire or toothed. *Flower-heads* very large, peduncled, solitary or loosely corymbose, heterogamous, rayed; ray-florets 1-seriate, neuter; disk-florets hermaphrodite, sometimes from absence of ray homogamous; involucre wide-campanulate; bracts 2-many-seriate, membranous or herbaceous, obtuse or acute; receptacle flat or convex; pappus

infolded, ^{enc*osin g th^} hermaphrodite flowers. *Calyx-limb*, ^{aristate} *aristate*, ^{of ray-florets connate in large, spreading, ligulate} of ray-florets connate in large, spreading, ligulate
 Coroll ^{with} *entire* lamina; of hermaphrodite florets ^{connate} connate in ^{5-fid} 5-fid ^{limb} limb
 2-lob ^A *Siam* ^{ens} *ens* syngenesious; anthers entire or minutely
 in ^{short} *Style* of hermaphrodite florets with arms ending
 obov ^{or long pu^escent} appendages. *Cypsel*a oblong or nearly
 aris ^{compressed, or slightly 4-angled; pappus of 2} compressed, or slightly 4-angled; pappus of 2
 1-2 ^{of*en c*ilated} paleaceous below, caducous, sometimes with
 smaller, intermediate, caducous bristles.

- Root ^{8nOttuberous} 5 annual herbs :—
 Leaves and stems scabridly hairy..... *annuus*.
 Leaves ^{Stems Softly cottony} *argyrophyllus*.
 Roots IK ^{tuberous; perennial herbs} *tubero*u**.

10^{89t} HKLIANTHUS ANNUUS Linn.; E. D. H. 74.
 In gardens in all the provinces ; cultivated only.
 A tall annual, occasionally cultivated also as an oil-seed
 Inon ^{croP-} Vernac. Surajmukhi. The common Sunflower.
 ---°- HELIANTHUS ARGYROPHYLLUS Torr. & Gr.
 In gardens in all the provinces; cultivated and also
 ireely springing up spontaneously in cultivated ground
 and waste places.
 A tall annual with softly cottony leaves. Vernac. Sated
 surajmukhi. The " Rains " Sunflower.
 1^{U9i} « HELIANTHUS TUBEROSUS Linn.; E. D. H. 88.
 In gardens generally.
 A perennial herb with tuberous, edible roots. Beng.
 Brahmokha. The Girasole, or Jerusalem Artichoke.

475. Spilanthes Linn.

Annual herbs; leaves opposite. FZower-heads usually long-
 ped unclcd, axillary or terminal, heterogamous and rayed, or
 hom ogamous and disciform; ray-florets, when present, female,
 1-s eriat«i; disk-florets hermaphrodite, all fertile; involucre ovoid
 or canipanulate; bracts sub-2-seriate; receptacle convex, elon-
 gat *) Pales enclosing the florets, often connate with the ovary as a
 stalk. ^{Ga ty^x-^mb} obsolete. *Petals* of ray-florets connate in a
 white or yellow ligulate corolla ; of hermaphrodite florets regular,
 tubu*ar? with a 4-5-fid limb. *Stamens* syngenesious; anthers with

truncate, entire, or 2-toothed base. *Style* of hermaphrodite florets with truncate arms. *Cypsela* of ray trigonous or dorsally compressed, margins and angles usually ciliate; pappus 0, or of bristles.

1092. SPILANTHES ACMELLA Linn.; F. B. I. iii- ^ »; E. D. S. 2571.

Chota Nagpur; N. Bengal; Chittagong.

An erect annual herb. *Beng.* Marhata-tiga.

476. *Guizotia* Cass.

Annual herbs; *leaves* opposite or the upper alternate. *Flower* heads peduncled, axillary and terminal, heterogamous, ray-florets 1-seriate, female; disk-florets hermaphrodite, fertile; involucre campanulate; bracts sub-2-seriate; outer foliaceous, inner passing into pales; receptacle convex or pales flat, scarious. *Calyx-limb* obsolete. *Petals* of ray-connate in yellow, ligulate corollas, with 2-3-toothed hermaphrodite florets connate in regular tubular corollas, campanulate, 6-fid limb; corolla-tube of both kinds embracing the top of the cypsela. *Stamens* syngenesious; anthers with entire, truncate base. *Style* of hermaphrodite florets with arms ending in subulate, hairy tips. *Cypsela* glabrous, dorsally compressed; apex rounded; pappus 0.

1093. GUIZOTIA ABYSSINICA Cass.; F. B. I. iii. 308; E. D.

Verbesina sativa F. I. iii. 441.

Cultivated in all the western and northern Provinces.

A stout, erect, annual oil-seed crop of the cold sea

Vernac. Surgúja, ram-tila.

477. *Synedrella* Gaertn.

Annual, branched, pubescent or villous herbs; *leaves* opposite, petioled, toothed. *Flower*-heads small, axillary and terminal, heterogamous, rayed; ray-florets 1-2-seriate, female; disk-florets hermaphrodite, all fertile; involucre ovoid or oblong; bracts few, the outer 1 or 2 foliaceous, the others passing into paleae; receptacle small; pales flat, scarious. *Calyx-limb* 2-3-toothed. *Petals* of ray-florets connate in ligulate corollas, with short, broad, 3-toothed, yellow lamina; of hermaphrodite florets connate in regular tubular corollas, with 4-toothed limb. *Stamens* syngenesious; anthers with subentire bases, *Style* of hermaphrodite

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florets with arms ending in long, acute tips. *Cypsela* of ray-florets dorsally compressed, smooth, with 2 lacerate wings; of central florets few, narrower, compressed or trigonous; often uriculate; pappus in both represented by spines at the top of the angles.

1094. SYNEDRELLA NODIFLORA Gaertn.; F. B. I. iii. 308.

C. Bengal; in cultivated ground.

An erect, branching, annual herb.

478. Glossocardia Cass.

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annual, glabrous herb; leaves alternate, slender, bipinnatisect. Flower-heads small, terminal and axillary, heterogamous, rayed; ray-florets female, usually solitary; disk-florets hermaphrodite, few, all fertile; involucre oblong; bracts few outer 1-3 slender, herbaceous, inner oblong, with broad, membranous margins; receptacle flat, small; pales few, flat. Calyx 2-toothed. Petals of ray-florets connate in ligulate corollas, with 2-fid lamina; of hermaphrodite florets connate in regular tubular corollas, with 4-fid limb. Stamens syngenesious; anthers with obtuse, entire base. Style of hermaphrodite florets with arms ending in linear, acute, hispid tips. *Cypsela* narrowly oblong, dorsally much compressed; faces bearded; pappus of 2 smooth, stiff awns.

1095. GLOSSOCARDIA LINEARIFOLIA Cass.; F. B. I. iii. 308; E. D.

G- 247. *Verbesina Boswellia* F. I. iii. 443.

W. Behar; Chota Nagpur.

A prostrate or, rarely, erect, diffusely branched, glabrous annual. Hind. Seri.

479. Cosmos Cav.

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or
2-3-pinnatisect. Flower-heads large or medium, long-stalked, solitary or loosely corymbose, heterogamous, rayed; ray-florets 1-seriate, neuter; disk-florets hermaphrodite, fertile, occasionally homogamous from abortion of ray; involucre subhemispheric; bracts 2-seriate, connate below, membranous, striate, somewhat unequal or the outer smaller, sometimes narrow, subherbaceous; receptacle flat; pales flat or concave. Calyx 2-4-toothed. Petals of ray-florets connate in ligulate corollas, with a spreading, entire, or somewhat toothed lamina;

of hermaphrodite florets connate in regular tubular corollas, with a cylindric, shortly 5-fid limb. *Stamens* syngenesious; anthers with entire or minutely 24-toothed base. *Style* of hermaphrodite florets with slender arms thickened upwards, hirsute, with short, acute appendages. *Cypsela* narrow, somewhat 5-gonous or dorsally compressed, more or less beaked; pappus of 2-4 persistent, retrorsely barbellate awns.

1096. COSMOS SULPUREUS Cav.

Chota Nagpur; C. Bengal.

A weed in waste places; native of America.

480. *Bidens* Linn.

Annual or perennial, sometimes scandent herbs; *leaves* opposite, entire, lobed or 1-2-pinnatisect. *Flower-heads* small corymbose, or medium subsolitary, heterogamous, rayed; ray-n^o 1-seriate, neuter, or rarely female, fertile; disk-florets hermaphrodite, fertile, occasionally homogamous from abortion of ray. involucre campanulate or subhemispheric; bracts sub-2-seriate, often slightly connate below, outer short, herbaceous, or long and leafy, inner membranous; receptacle flat or convex; pales narrow, nearly flat. *Calyx-limb* 2-4-toothed. *Petals* of ray-florets connate in ligulate corollas, with a spreading, entire, or somewhat toothed lamina; of hermaphrodite florets connate in regular tubular corollas, with a cylindric, shortly 5-fid limb. *Stamen* syngenesious; anthers with entire or bluntly sagittate base. *Style* of hermaphrodite florets with arms hirsute upwards, with short acute, or long subulate appendages. *Cypsela* dorsally compressed or somewhat 4-gonous, linear or cuneiform, often narrowed but not beaked above; pappus of 2-4 persistent, retrorse barbellate awns.

1097. BIDENS PILOSA Linn.; F. k. I. iii. 309. B. *Uniaia*
F. I. iii. 411.

Chota Nagpur; N. Bengal.

An erect herb, with adhering, barbed achenes.

481. *Glossogyne* Cass.

Perennial glabrous herbs, with almost naked stems and branches; *leaves* radical, crowded, pinnatifid, or cuneate and 3-toothed, cauline alternate or the lower opposite or 0. *Flower-heads* small, few, corymbose, heterogamous and rayed; ray-floret *retrograde*;

disk-florets hermaphrodite, all fertile, occasionally homogamous **from** abortion of ray; involucre small; bracts 2-3-seriate, narrow, **bases** connate; receptacle flat; pales scarious, concave or flat. $<^{\wedge}$ -limb 2-toothed. *Petals* of ray-florets connate in hgulate hollas, with spreading, entire, or coarsely 2-3-toothed lamina; $^{\circ}$ * hermaphrodite florets connate in regular tubular corollas, with cylindrio, 5-fid limb. *Stamens* syngenesious; anthers with obtuse ^base. *Style* of hermaphrodite florets with arms ending in long, bairy tips. *Cypsela* dorsally compressed linear-ovoid or faintly \wedge nged, glabrous, truncate; pappus of 2 slender, retrorsely bar-bette awns. „„« -n -n

1098. GLOSSOGYNE PINNATIFIDA DC.; F. B. I. iii. 310; E. D. Q. 250, *Zinnia Bidens* F. I. iii. 435.

In all the western and northern provinces.

A perennial glabrous herb. *Santa**. Barangom, bir barangom.

482. *Chrysanthellum* Bich.

Annual glabrous herbs; *leaves* alternate, pinnatifid, or radical, toothed. *Floiver-hesids* small, peduncled, terminal and axillary, heterogamous, rayed; ray-florets 1-seriate, female; disk-florets hermaphrodite, all fertile; involucre hemispheric; bracts 1-2-seriate; receptacle flat; pales narrow, flat, scarious. *Calyx-hmb* truncate. *Petals* of ray-florets connate in ligulate corollas, with spreading, entire, or 2-toothed lamina; of hermaphrodite florets connate in regular tubular corollas, with campanulate, 5-fid limb. *Stamens* syngenesious; anthers with entire, obtuse bases. *Style* of hermaphrodite florets with slender arms ending in long, subulate tips. *Cypsela* linear-oblong, dorsally compressed, smooth on ^{tho} \wedge e of outer florets, or externally tuberculate, the outermost thick with obtuse margins, the inner flattened and 2-winged; P^aPpys a minute corona.

10⁹. CHRYSANTHELLUM INDICUM DC.; F. B. I. iii. 310.

Chota Nagpur; Behar; W. Bengal.

¹ An annual glabrous herb.

483* *Galinsoga* Ruiz & Pav.

Annual herbs; *leaves* opposite, entire or toothed. *Flo* wer-heads small, peduncled, subterminal and axillary, heterogamous, rayed; ray-florets few, female, 1-seriate; disk-florets hermaphrodite, all

Galinsoga.

fertile; involucre hemispheric; bracts few, 1-2-Berjii^o, ovate[>] obtuse, striate; receptacle conic or elongate; pales^{slende} serrate. *Calyx-limb* paleaceous or obsolete. *Petals* of ray^{-flore} connate in ligulate corollas, with yellow, spreading^{atir}, toothed lamina; of disk-florets in regular tubular cor^{ollas,} narrowly campanulate, minutely 5-toothed limb. *Stamens*^{syngene-} sesious; anthers with subentire base. *Style* of hermap^{hr} florets with acute arms, or arms slender with an acute, si^{Fort tip.} *Cypselas* angled, or the outer dorsally compressed; P^aP^p us of^{Q.} few scarious, entire awned or fimbriate scales, of the ray o^{ften}.

1100. GALINSOGA PARVIFLORA Cav.; F. B. I. Hi- 311.

C. Bengal, occasionally.

A weak, erect herb, appearing occasionally as a cold-weather weed, but not persisting.

484. Tridax Linn.

Perennial herbs; *leaves* opposite, pinnatisect; ^{se f me LI}ts few, narrow. Fflower-heads very long-peduncled, medium, hetero- gamous, rayed; ray-florets female; disk-florets hermaphro^{dite} all^{rt,} fertile; involucre campanulate; bracts few-seriate, outer^{brano} broad, herbaceous; receptacle flat or convex; pales mem^u *Calyx-limb* bristly. *Petals* of ray-florets connate in lig^u 2-labiate corollas, with a large 3-fid or 3-partite^{outer, J} smaller 2-fid or 2-partite^{odite} or obsolete inner lip; of hermap^{te} florets connate in regular tubular corollas, with elonga^a limb. *Stamens* syngenesious; anthers with short, acu^{ey} auricles. *Style* of hermaphrodite florets with arms hairy u^{war} tips subulate. *Cypselas* turbinate or oblong, silky; papp^{as} or long aristate, feathery bristles.

1101. TRIDAX PROCUMBENS Linn.; F. B. I. iii- 3*¹-

In all the provinces.

A weak, straggling, perennial herb.

485. Chrysanthemum Linn.

Perennial or annual herbs, rarely shrubs; *leaves* ^{alfcern}ate^{ter!} entire, toothed, lobed or pinnatifid. Fflower-heads large, ^{heteroga?} minimal, long-peduncled, or smaller and corymbose, ^{LO} rayed, very rarely homogamous from abortion of ray; ^{ra>}ti^{etS} female, 1-seriate; disk-florets hermaphrodite, all fertile; i»voW^{cxe}

hemispheric or wide-campanulate; bracts many-seriate, broad, depressed, inner with scarious tips, outer shorter, often with scarious and coloured margins; receptacle flat or convex, naked. *Valyx-Mmb* cupular, auriculate or obsolete. *Petals* of ray-florets connate in a ligulate corolla, with spreading, entire, or toothed lamina; of hermaphrodite florets connate in regular tubular corollas, with cylindric or 2-winged tube, and more or less campanulate, 4-5-lobed limb. *Stamens* syngenesious; anthers with obtuse, entire base. *Style* of hermaphrodite florets with arms truncate and penicillate at their tips. *Cypsela* subterete or angled, variously ribbed or winged; pappus 0 or short, or cupular or auriculate.

1102. CHRYSANTHEMUM CORONARIUM Linn.; F. B. I. iii. 314; E. D. c. 1043. *Pyrethrum indicum* F. I. iii. 436.

N. Bengal.

An annual herb; a cold-weather field crop. *Hind.* Gul-chini; *Beng.* G-ul-dandi.

486. Cotula Linn.

Perennial or annual, often creeping, small herbs; leaves alternate, pinnatifid or pinnatisect, rarely entire or toothed. Flowers as small, peduncled, yellow, heterogamous, rarely homogamous, disciform; outer florets female, 1-2-seriate; inner florets hermaphrodite, all fertile or inner sometimes sterile; involucre hemispheric or campanulate; bracts sub-2-seriate, herbaceous or membranous, margins often scarious; receptacle naked. *Calyx* imauriculate or obsolete. *Petals* of female florets connate in conic corollas or obsolete; of hermaphrodite florets connate in jugular corollas, with thick, 2-winged, or slender, wingless tube; anthers shortly 4-fid. *Stamens* syngenesious; anthers with obtuse, entire base. *Style* of hermaphrodite florets with truncate or two arms, of sterile florets occasionally entire. *Cypsela* of ray-florets or of all florets stipitate, compressed, 2-4-nerved or nerveless, sometimes sheathed above by the base of the corolla, sometimes with a short, auriculate pappus.

• anthers ovate, with thick, narrow wings; leaf-segments not mucronate

anthemoides.

• anthers angled but not winged; leaf-segments mucronate...*hemispharica.*

1103. COTULA ANTHKMOIDES Linn.; F. B. I. iii- 316; E. **D.**
C. 2025.

Behar, very rare.

A weak, diffuse weed. *Hind.* Babuna.

1104. COTULA HEMISPHERICA Wall.; F. B. I. iii. 316. *Artemi***
hemisphcerica F. I. iii. 422.

Tii-hut; N. C. and E. Bengal; Chittagong.

An erect weed. *Hind.* Babuna.

487. Centipeda Lour.

Annual or perennial herbs; *Leaves* alternate, entire or toothed^{d^}
Flower-heads small, sessile on the branches or racemose, disci-
form, yellow; outer florets female, many-seriate; disk-florets few,
hermaphrodite, all fertile; involucre hemispheric; bracts^{2 "sen* tJj}
spreading in fruit; receptacle naked. *Calyx-limb* obsolete. *P^{e^}*
of female florets connate in minute, obscurely toothed corollas,^{of}
hermaphrodite florets connate in regular, short-tubed corollas,^{il as,}
with 4-fid, campanulate limb. *Stamens* syngenesious; anthers^{hers}
with obtuse, entire base. *Style* of hermaphrodite florets withth
short, truncate arms. *Cypselas* 4-angled, with obtuse tip; ^{an#}
hairy; pappus 0. **p.**

1105. CENTIPEDA ORBICULARIS Lour.; F. B. I. iii- 317; E.
C. 913. Artemisia sternutatoria F. I. iii. 423.

In all the provinces. *vr kh-*

A diffuse perennial weed of damp places. *Hind.* JN a
chikni, pachitti; *Beng.* Mechitta.

488. Sphseromorphaea DC.

A small perennial herb, pubescent with crisped hairs,^{^v itk*}
woody rootstock and prostrate, somewhat woody branches; *te^{av es}*
alternate, sessile, obovate. *Flower-heads* axillary, subsoji^{tar^}
shortly peduncled, heterogamous, disciform, yellow; outer riore
female, many-seriate; inner fewer, hermaphrodite, all fertile^{1e>}
involucre hemispheric; bracts many-seriate, oblong, obtuse, cor^{i.}
aceous, incurved in fruit; receptacle naked. *Calyx-limb* obsole^{* e.}
Petals of female florets connate in elongated, slender, tubular^r
corollas, inflated below; of hermaphrodite florets connate ¹
regular tubular corollas, with 4-cleft limb. *Stamens* syngenesiou^{* e.}
anthers with obtuse, entire bases. *Style* of both female and her-

hermaphrodite florets with 2-fid arms. *Cypsela* subcylindric, slender, broadly ribbed, hairy only at the base ; pappus 0.

1106. SPHEROMORPHJA RUSSELLIANA DC.; F. B. I. iii. 317.

W. Bengal; Chota Nagpur; Orissa.

A small, diffuse, straggling weed.

489. Artemisia Linn.

Herbs or shrubs, usually strong-scented; *leaves* alternate, entire, serrate or 1-3-pinnatisect. *Flower-heads* small, solitary or fascicled, racemose or paniced, heterogamous or homogamous, disciform ; outer florets female, 1-seriate, fertile ; disk-florets hermaphrodite, fertile or sterile ; involucre ovoid, subglobose or hemispheric ; bracts few-seriate, outer shorter, margins scarious; receptacle flat or raised, naked or hirsute. *Calyx-limb* obsolete. *Petals* of outer florets connate in very slender corollas, with 2-3-toothed apex ; of hermaphrodite florets regular, tubular, with 5-fid limb. *Stamens* syngenesious; anthers with obtuse, entire base. *Style* of hermaphrodite florets with arms truncate, usually penicillate, when florets sterile the arms often connate. *Cypsela* very minute, ellipsoid, oblong or subobovoid, faintly striate ; pappus 0.

Perennial; heads heterogamous ; outer florets female, disk-florets hermaphrodite, sterile ; leaves flabellately-lobulate.....*parviflora*.
Annual; heads heterogamous; outer florets female, disk-florets hermaphrodite, fertile ; leaves capillary-multifid.....*caruifolia*.

1107. ARTEMISIA PARVIFLORA Roxb.; F. I. iii. 420; F. B. I. iii. 322 ; E. D. A. 1458.

Chota Nagpur.

A shrubby, inodorous plant, 1-3 feet high.

1108. ARTEMISIA CARUIFOLIA Ham.; F. I. iii. 422 (*caruifolia*) ; F. B. I. iii. 324.

N. and E. Bengal.

A stout, soft-stemmed plant, 2-4 feet high.

490. Echinops Linn.

Thistle-like, white, tomentose herbs ; *leaves* alternate, pinnatifid, spinous. *Flower-heads* in globose, involucrate balls, blue or white, sessile or shortly stipitate on a common receptacle, 1-flowered; florets hermaphrodite, fertile; involucre oblong; bracts many-seriate, rigid, pungent or spinescent, outer shorter,

[Echinops.

inner spatulate, innermost linear or lanceolate, some connate in a tube, with one long, rigid spine on outer side; tubule minute. *Calyx-limb* setose. *Petals* connate in tubular corolla, with 5 slender segments. *Stamens* filaments glabrous; anthers with sagittate base; auricles short, entire or fimbriate. *Style* with thick arms and thick basal ring, at length spreading. *Cypselæ* elongate, villous; pappus of many short, free or connate bristles.

1109. ECHINOPS ECHINATUS DC.; F. I. iii. 447; F. B. x. u.

Chota Nagpur; Behar; W. Bengal.

A branched, spreading, rigid annual, 1-2 feet high.

491. Cnicus Linn.

Direct, simple or branching thistles; leaves decurrent on the stem, serrate or pinnately lobed; often spinescent. *Flowers* solitary, peduncled or scattered or crowded, homogamous; florets all hermaphrodite, or rarely by abortion 1-sexual, dioecious; involucre hemispheric or globose; bracts many-seriate, spreading, or recurved and spinescent, or with spineless, the outer subfoliaceous; receptacle flat or convex, bristly. *Calyx-limb* hirsute. *Petals* connate in slender corollas, with equal or oblique 5-fid limb. *Stamens* filaments hairy or glabrous; anthers with sagittate base, connate; tails slender. *Style* with short, rarely 2-armed. *Cypselæ* glabrous, obovoid, obtusely 4-angled, 5-10-ribbed, truncate or unibonate at the top, with straight basal areola; pappus-hairs feathery, unequal, longer clavellate.

1110. CNICUS ARVENSIS Hoffm.; F. B. I. iii. 362; E. V.

Carduus lanatus F. I. iii. 408.

In all the provinces.

An erect, leafy field-weed. Beng. Silkanta.

492. Silybum Gaertn.

An erect, stout, thistle-like herb; leaves above, sinuately lobed or pinnatifid; lobes and teeth *Flowers* large, terminal, solitary, nodding, florets all hermaphrodite, fertile; involucre wide-campylate; bracts many-seriate, the outer with wide, spinescent,

base, and with a long, spinescent tip, the inner entire, subspinescent; receptacle flat, densely bristly. *Calyx-limb* annular. *Petals* connate in slender, tubular, regular corollas, with deeply 5-fid., enlarged limb; segments narrow. *Stamens* syngenesious; filaments glabrous, connate in a sheath below; anthers with sagittate base; auricles contiguous, connate, mucronate or shortly tailed. *Style* subentire, annulate, hirsute beyond the faint annulus. *Cypsela* glabrous, obovate-oblong, with straight basal areola; Pappus of many-seriate, subpaleaceous, unequal hairs, annulus deciduous with the seta.

¹¹¹1. SILYBUM MARIANUM Gaertn.; F. B. I. iii. 364.

In gardens only, in the cold season, in our area.

A large, glabrous thistle, with white-veined leaves.

493. Saussurea DC.

Annual, biennial, or perennial herbs, glabrous or tomentose; unarmed, alternate, entire, toothed, pinnatifid or pinnatisect. *Flowers* narrow or broad, sometimes crowded on the enlarged head of a simple stem, peduncled or sessile, solitary, globose, or pedicelled; homogamous; florets purple or bluish, hermaphrodite, fertile; involucre ovoid, oblong, globose or spheric; bracts many-seriate, adpressed, not spinescent, inner narrower; receptacle flat or convex, densely bristly, rarely naked. *Calyx-limb* annular. *Petals* connate in slender, regular corollas, with a narrow, 5-fid limb. *Stamens* syngenesious; filaments free, glabrous; anthers with sagittate base; auricles connate; tails usually long, entire, ciliate or woolly, with linear arms. *Cypsela* glabrous, oblong, 4-ribbed, smooth or rugose; top truncate and cupular, or crowned by a thickened disk; the persistent style-base; basal areola straight; Pappus hairs 1-2-seriate, inner penicillate, base thickened and connate in a deciduous ring; outer of rigid scabrid bristles, rarely penicillate, occasionally 0.

Stem below and inflorescence glabrous; bracts of the involucre glabrate, outer obtuse, inner lanceolate-acuminate; achenes smooth, 10-ribbed.

affinis.

Stem below and inflorescence cottony; bracts of the involucre cottony or pubescent, all lanceolate-acuminate; achenes muricate, 5-angled

candicans.

1112. SAUSSUREA AFFINIS Spreng.; F. B. I. iii. 373. *Serrai^{ula}*
carthamoides F. I. iii. 407.

N. and E. Bengal; Chittagong.

An annual herb, 2-8 feet high, stem as thick as ^{the}
little finger.

1113. SAUSSUREA CANDICANS Clarke; F. B. I. iii. 373; E* **D.**
S. 904.

Chota Nagpur.

An annual herb, 2-5 feet high, stem as thick as th
thumb; occasionally small, with scapose, 1-^{head}
stems.

494. Goniocaulon Cass.

An erect, glabrous, branched annual; stem acutely 4-8-angle ^d
leaves narrow, alternate, toothed. *Floiver-heads* narrow, ^{fasCicled}
and corymbose, homogamous; florets few, all hermaphr ^{odite}
fertile; involucre oblong, base very narrow; bracts many-^{te}
pale, very narrow, rigid, erect, acute, not spinescent, outer ^{du}
ally shorter; receptacle very narrow, paleaceous. *Caly* ^{il}
chaffy. *Petals* connate in regular, similar, slender corollas, th
long, cylindric, deeply 5-cleft limb. *Stamens* syngenesious; ^{la-}
ments hirsute; anthers with sagittate base, connate; tails ^t
Style with filiform arms. *Cypsela* glabrous, oblong, subcylindric, ^{ndric,}
about 20-ribbed; basal areola straight; pappus-scales **many-**
seriate, very unequal.

1114. GONIOCAULON GLABRUM Cass.; F. B. I. iii. 377. *Athanasia*
indica F. I. iii. 417.

W. Behar.

An erect, glabrous, branched annual, 1-3 feet high.

495. Yolutarella Gass.

Annual herbs, dichotomously branched; *leaves* alternate
FWr-heads subsolitary, purple, violet, or blue, hetero-^S
outer florets 1-seriate, neuter; inner hermaphrodite, ^v
fertile; involucre ovoid or globose; bracts many-seriate, innermost narrow,
acute, outer shorter, acute, awned or spinescent; receptacle ^t
densely bristly. *C* ^l ^{limb} ^{setose} *Peta* ^U ^{connate} ⁱⁿ ^{reg} ^l
corollas, with slender short **tube**, and **cylindric** 5-nd [&]
Stamens syngenesious; filaments hirsute or glabrous; ^{herB}
with sagittate base; ^{auri} ^{cles} connate, shortly tailed. *Style* ^{with}
hlifoim, free or connate arms. *Cypsela* obovoid or oblong, ^{angled}

Or almost winged, 5-15-ribbed, often striate and pitted between the ribs; basal areola oblique or lateral; pappus-bristles many-seriate, the outer gradually shorter, innermost 2-4, dilated or flattened.

H15. VOLUTARELLA DIVARICATA Benth.; F. B. I. hi. 383 ; E. D. V. 279. *Carduus ramosus* F. I. iii. 407.

Behar; Chota Nagpur.

An annual, straggling, stiff weed.

496. *Carthamus* Linn.

Thistle-like herbs; *leaves* alternate, rigid, spinescent. *Flower-heads* solitary or subcorymbose, rather large, usually homogamous; florets all fertile, hermaphrodite, rarely a few marginal female or neuter; involucre ovoid or subglobose; bracts many-seriate, inner dry, entire, or with a short, fimbriate appendage, outer with a foliaceous, toothed, or spinescent appendage, sometimes absent in cultivated individuals; receptacle flat, densely bristly. *Calyx-limb* obsolete or chaffy. *Petals* connate in regular similar corollas, with slender tube, and oblong, 5-cleft limb, adnate at its base, in female florets petals obsolete. *Stamens* syngenesious; filaments usually hirsute in the middle; anthers with sagittate base, with connate auricles and short, fimbriate tails. *Style* with short or long filiform arms. *Cypselas* globose, ovoid, 4-angled or compressed; basal areola oblique or lateral, all or only the outer without a pappus, or all or only the inner with paleaceous, many-seriate pappus.

1116. *CARTHAMUS TINCTORIUS* Linn.; F. I. iii. 409; F. B. I. hi. 386; E. D. C. 637.

Cultivated in the western and northern provinces.

A thistle-like herb. *Vernac.* Kusumb, kajirah. The Sañower.

497. *Cichorium* Linn.

Erect, glabrous or hispid herbs, with divaricate, sometimes spinescent branches; *leaves* upper subentire, lower pinnatifid. *Flower-heads* sessile on the branches or on thickened peduncles, homogamous, blue, ligulate; involucre narrow; inner bracts 1-seriate, at length concave at the base with the outer florets in the concavity, outer few, shorter; receptacle flat, naked or somewhat fimbriate. *Calyx-limb* chaffy. *Petals* connate in narrow, ligulate corollas, lamina truncate, 5-toothed. *Stamens* syngenesious;

nesious; anthers sagittate at base, with mucronate-acuminate auricles. *Style* with slender, somewhat obtuse arms. *Cypsel* glabrous, somewhat 5-angled, or the outer subcompressed and many-ribbed or striate; base contracted, tip truncate or with the margin slightly produced; pappus of short pales, 2-3-seriate. F. B. I.

1117. CICHORIUM INTYBUS Linn. var. ENDIVU Clarke; iii. 391; E. D. C. 1104.

Cultivated in the western and northern provinces. Beng. and Hind. Kasni. The Endive.

498. Picris Linn.

Erect, branched, hispid herbs; *leaves* alternate or radical, toothed, or pinnatifid. *Lower-heads* terminal, long-peduncled, homogamous, yellow, ligulate; involucre suburceolate or campanulate; inner bracts 1-seriate, subequal; outer many-seriate herbaceous, narrow, or the outermost broad, foliaceous; receptacle flat. *Calyx-limb* hirsute. *Petals* connate in ligulate corolla lamina truncate, 5-toothed. *Stamens* syngenesious; anthers sagittate base; auricles acute or shortly setaceous. *Style* slender arms. *Cypsel* narrow, incurved, subterete, compressed or angled, glabrous, 5-10-ribbed, ribs transversely rugose, short or long; all similar or the outer with a shorter beak; pappus obsolete; pappus usually copious, of 1-seriate, sometimes ciliate hairs or of fewer rigid hairs, dilated at the base, sometimes a few outer short hairs.

1118. PICRIS HIERACIODES Linn.; F. 13. I. iii. 393.

Chittagong, Sitapahar.

A coarse herb, 1-4 feet high.

499. Crepis Linn.

Annual or perennial, glabrous or hairy herbs, hairs all *leaves* radical or alternate, cauline often stem-clasping* toothed, or pinnatifid. *Lower-heads* peduncled, solitary, cycled, or corymbose, yellow or red, homogamous, ligulate; involucre cylindrical or campanulate; bracts either many-seriate regularly imbricate, or the outer smaller and shorter than the linear 1-seriate inner; base or midrib often thickened. *Flowering*; receptacle flat, rarely concave, naked or showy fimbriate. *Calyx-limb* hirsute. *Petals* connate in W

Corollas; lamina truncate, 5-toothed. *Stamens* syngenesious; anthers with sagittate base; auricles acute or shortly setaceous. *Style* with slender arms. *Cypsela* more or less fusiform or oblong, rarely short and cylindric, often slender, glabrous or scaberulous, 10-20-ribbed; tip narrowed or beaked; pappus short or long. Usually copious, of simple, soft, usually silvery hairs, rarely brownish and stiff or brittle.

Annual; radical leaves obovate, sinuate-toothed or runcinate-pinnatifid; flowering stems long, slender; heads on slender, bracteolate peduncles; achenes with many subequal ribs..... *japonica*.
Perennial; radical leaves narrowly obovate, spatulate, linear or lanceolate, obtuse or acute, entire or sinuate-toothed; flowering stems usually shorter than the leaves; heads few, on short, bracteolate peduncles; achenes with about 6 thick smooth ribs and slender intermediate ones..... *acaulis*.

19. CREPIS JAPONICA Benth.; F. B. I. iii. 395.

In all the provinces.

An annual herb, 6-18 in. high.

H20. CREPIS ACAULIS Hook. f.; F. B. I. iii. 396. *PrenantJies acaulis* F. I. iii. 403.

ChotaNagpur; C.Bengal; N.Bengal.

A dwarf perennial herb.

500. Lactuca Linn.

Glabrous or hispid, milky herbs; leaves radical and alternate, entire, toothed, pinnatifid or pinnate, cauline often stem-clasping and auricled. Flower-heads sessile or peduncled, panicled, corymbose; racemose, or subspicate, homogamous, yellow, purple or like, florets ligulate; involucre usually narrow; bracts few, rarely many-seriate, thinly herbaceous, margins often membranous. Not altering in fruit, inner slender, subequal, outer often very short; receptacle flat, naked. *Calyx-limb* pilose. *Petals* connate in ligulate corollas, with truncate, 5-toothed tip. *Stamens* syngenesious; anthers with sagittate base; auricles acute or setaceous. *Style* with slender arms. *Cypsela* compressed or fattened, ovoid-oblong or narrow, beaked; faces 3-many-ribbed; ribs slender or strong, smooth or rugose, the middle one often strongest; beak slender, or short and cylindrical, dilated into an entire or toothed pappose disk; pappus copious, hairs very

slender, simple, usually soft and white, very variable, persistent or separately deciduous, sometimes with a minute outer ring.

Stout, succulent, radical leaves many, compact; stem very leafy; achenes black.....^s.....^{*ativa}

Slender, radical leaves long, membranous, flaccid; stem-leaves few, achenes red-brown.....^{+polyMP^mTM'}

1121. LACTUCA SATIVA Linn.; F. I. iii. 403. *L. ScarioUt* var. *saliva* F. B. I. iii. 404; E. D. L. 21.

Cultivated in the cold weather in gardens. [^]
A more or less cabbage-like herb. Vernac. Kahu, sa » ^{1 a}
The Garden Lettuce.

1122. LACTUCA POLYCEPHALA Benth.; F. B. I. iii- 410.

N. Bengal. ^{-- v^c}
A slender, flaccid annual weed, with subumbella inflorescence.

501. *Picridium* Desf.

Perennial or annual, glabrous milky herbs; *leaves* radical ^{1 ^}
alternate, toothed or pinnatifid; lobes often crisped, toothed; ^{J ar}
spinulose. *Flmoer-heaAa* long-peduncled, peduncle often ^{hoil0^}
yellow, homogamous, ligulate; involucre campanulate; ^{^a}
many-seriate, thinly herbaceous, innermost subequal, lanceola ^{te}
unchanged in fruit, outer shorter, broader, with scarious margm [^]
receptacle flat, naked. *Calyx-limb* annular, setose. *Petals* ^{co}
nate in ligulate corollas, with truncate, 5-toothed lamina. ^{Sta mens}
syngenesious; anthers with sagittate base; auricles seta ^{ceous- ^}
acuminate. *Style* with slender arms. *Cypsela* oblongr truncat ^{ly}
at both ends, constricted at the tip; ribs 4-5, thick, ^{fransvel??tgi}
rugose; pappus-hairs many-seriate, soft, slender; simpl^e > w ^h
connate at the base in a deciduous ring.

1123. PICRIDIMUM TINGITANUM Desf.; F. B. I. iii. 413. ^{fig.}

Very occasionally in gardens, in the western F ^{^ t s}
an annual only.

A glabrous milky herb.

502. *Sonchus* Linn.

Annual or perennial milky herbs; *leaves* radical or alternate [']
cauline often stem-clasping, entire or toothed or pinnatifid; seg [']
ments often spinulose-toothed. JWoiw-heads terminal, irW* [']
larly subcorymbose, umbellate or panicled, yellow, homogamous,

ligulate; involucre ovoid, campanulate or cylindrical, often dilated
 thickened and conic at the base; bracts many-seriate, herbaceous
 outer smaller; receptacle flat, naked. *Calyx-limb* setose. *Petals*
 connate in ligulate corollas, with truncate, 5-toothed lamina.
Stamens syngenesious; anthers with sagittate base; auricles
 shortly sebaceous, acuminate. *Style* with slender arms. *Cypsela*
 ovoid, obovoid or ellipsoid, compressed, not beaked, ribbed; rib
 smooth or transversely rugose; pappus copious, hairs many-
 seriate, very slender, simple, usually white and united at the base
^{IXI} a deciduous ring.

Annual; achenes distinctly compressed; heads crowded:—

- Leaves with rounded auricles; achenes faintly muriculate between the
 3 ribs of each face.....*asper*.
 Leaves with acute or acuminate auricles; achenes distinctly muriculate
 between the 3 ribs of each face.....*oleraceus*.
Perennial; achenes hardly compressed, with thick, regular ribs; heads
^{max}; leaves with rounded auricles.....*arvensis**.

¹124. *SONCHUS ASPER* Vill.; F. B. I. iii. 414.

In most of the provinces, rather common.

A tall milky annual.

H25. *SONCHUS OLERACEUS* Linn.; F. B. I. iii. 414; E. D. S. 2357.

In most of the provinces, not very common.

A tall milky annual. *Hind.* Titlia.

H26. *SONCHUS ARVENSIS* Linn.; F. B. I. iii. 414; E. D. S. 2354.
S. orixensis F. I. iii. 402.

C. Bengal, rather rare.

A tall, milky-juiced herb, with creeping perennial root-
 stock. *Hind.* Sahadevi bari; *Beng.* Ban-palang; *SantaL* Bir barangom.

503. *Launea* Cass.

Perennial glabrous herbs, with yellowish juice; *leaves* chiefly
 radical, sinuate, lobed or pinnatifid, margins often spinulose-
 toothed. *Flower-heads* peduncled or lateral and sessile on the
 branches, racemose or paniculate, or solitary or fascicled, yellow,
 homogamous, ligulate; involucre campanulate or cylindrical; bracts
 many-seriate, herbaceous, margins often membranous, inner sub-
 equal, outer various; keel often thickened in fruit; receptacle

Calyx, adnate to ovary; upper lip 3-lobed, lower 2-lobed. *Petals* connate in a 5-lobed, irregular corolla; lobes imbricated, the lowest usually dissimilar (lip). *Stamens* 2, the filaments discrete from corolla, connate in a column with the style; anthers sessile on the apex of column, their cells at length confluent at the tip. *Disk* small, epigynous, or obsolete. *Carpels* 2, connate in an inferior, 2-celled, or partially (basally) 1-celled ovary; ovules in each cell on the middle of the septum, numerous; stigma at apex of column. *Fruit* a 2-celled or (by absorption) 1-celled capsule, dehiscent at apex or only in the middle. *Seeds* many, rarely (by absorption) solitary, small; albumen fleshy; embryo minute.

504. *Stylidium* Sw.

Herbs with slender stems; leaves subrosulate or scattered. *Flowers* on many-flowered, rarely, 1-flowered peduncles or scapes; bracts paired or solitary. *Sepals* connate in a 5-lobed, often more or less 2-lipped calyx. *Petals* connate in an irregularly 5-lobed corolla, with 4 lobes erect in pairs, and a fifth smaller and recurved. *Stamens* 2, connate in an elongated column; apex at first deflexed, elastically recurved when irritated; stigma undivided. *Carpels* connate in a 2-locular ovary. *Fruit* a capsule; valves dehiscing from apex downwards, or opening in the middle but united at apex and base. *Seeds* minute; albumen fleshy.

Stems short, stout; leaves terminal, subrosulate; peduncles one or more, leafless, dichotomous; corolla white..... *Kunthil.*
Stylidium erect, slender, leafy, leaves scattered; corolla rosy or purplish:—

- Stems 4-8 in. high; flowers rather numerous..... *tenellum*.
 Stems 1-2 in. high; flowers few, 1-4..... *tenellum* var. *minima*.

1130. *STYLIDIUM KUNTHII* Wall.; F. B. I. iii. 420.

N. Bengal; Chittagong.

A small herb of grassy places, 1-8 in. high.

1131. *STYLIDIUM TENELLUM* SW.; F. B. I. iii. 420.

E. Bengal; Chittagong.

A small herb of swamps and rice-fields.

1131/2. Var. *MINIMA* Clarke; F. B. I. iii. 420.

Chota Nagpur.

A minute herb of wet places.

Order LXXIII. CAMPANULACEÆ.

•Herbs or undershrubs, sometimes twining, often with juice. *Leaves* alternate or opposite, entire or toothed, lobed; stipules 0. *Flowers* hermaphrodite, rarely by a 1-sexual, regular or irregular, axillary or terminal, solitary, or subpaniculate; uppermost leaves reduced to bracts; bracteoles usually 0. *Sepals* more or less connate in an inferior or superior calyx; limb 4-6-partite, usually persistent. *Petals* connate in a superior regular or irregular tubular, rotate, or campanulate; lobes as many as calyx-segments valvate or induplicate in bud. *Stamens* 4-6, alternating with the corolla-lobes, inserted with the corolla on the edge of an *anther disk*, rarely adnate to corolla-tube; anthers free or connate, their cells parallel; dehiscence longitudinal, introrse. *Pistils* connate in a 2-5-celled ovary; ovules many on axial placentae at the inner angle of the cells; style cylindrical; stigmatic lobes many as constituent carpels. *Fruit* a capsule or a berry, sometimes indehiscent and dry. *Seeds* very many, small, elliptical; albumen fleshy; embryo straight, axial.

Corolla 2-lipped, cleft dorsally to the base; anthers connate.....Lobelia.

Corolla regular; anthers free or imperfectly connate:—

Fruit an indehiscent berry; stigma lobed.....Campa

Fruit opening by pores or valves:—

Capsule only dehiscent within the calyx-teeth:—

Capsule circumscissile, opening by the fall of an apical lid; flowers in dense spikes; stigma lobed.....Cephalostigma.

Capsule dehiscent by 3-5 apical valves bearing the septa, lax:—

Stigma capitate; corolla rotate, deeply cleft, with linear lobes.....Cephalostigma.

Stigma lobed; corolla campanulate.....Wahlenbergia.

Capsule laterally dehiscent at the base or sides below the calyx-teeth; corolla campanulate; stigma lobed.....Camp

505. Lobelia Linn.

Herbs, sometimes tall; *leaves* alternate, toothed, rarely subentire. *Flowers* on axillary, 1-towered, sometimes subracemose peduncles; bracts leafy; bracteoles small, often 0. *Sepals* connate in an adnate, turbinate, or obovoid calyx; limb 5-fid

5-partite; lobes slightly unequal. *Petals* connate in an oblique or incurved, 2-lipped corolla, upper lip 2-partite, lower 3-lobed. *Stamens* 5, connate in a tube, free from the corolla or nearly so; anthers connate round the style, all subequally bearded or the 2 lower tipped with bristles, the 3 upper naked. *Carpels* connate in a & inferior, 2-celled ovary; placentas hemispheric; ovules many; stigma shortly 2-fid. *Fruit* a capsule, loculicidally 2-valved within the calyx-teeth. *Seeds* many, minute, ellipsoid, compressed or trigonous.

Anthers all subequally bearded on the apex; corolla small with unequal lobes:—

Seeds distinctly 3-angled; pedicels usually longer than the ovate leaves; capsules rounded at the base or only faintly tapering into the Pedicels:—

Stems distinctly 3-cornered; prostrate and usually rooting, at east near base; pedicels only slightly longer than the leaves; seeds ellipsoid, narrowed at both ends:—

Leaves glabrous, subsessile..... *trifona*.

Leaves pilose on the nerves beneath, petioled..... *a (finis)*.

Stem faintly 3-cornered; suberect, not rooting; leaves short-petioled, the upper small, bract-like; pedicels very long, slender seeds subspherical..... *terminalis*.

Seeds ellipsoid, compressed; stem 3-cornered, often somewhat 3-winged; capsules lanceolate, triangular at base, tapering markedly into the pedicels; pedicels not longer than the subrhomboid leaves

A „..... *trialata*.

Anthers 5, only the two lower bearded, the three upper naked; corolla 2-lipped, the lobes nearly equal in length; leaves linear or oblong-nceolate..... *j*.

..... *radicans*.

-132. LOBELIA TRIGONA Koxb.; F. I. i. 506; F. B. I. iii. 423 E. D. L. 509.

Chota Nagpur; N. and E. Bengal.

A small annual glabrous herb, branches 6-12 in. ascending, rooting at the base. *Santal*. Chauric' arak'.

11£3. LOBELIA AFFINIS Wall.; F. B. I. iii. 424.

E. Bengal; Chittagong.

A small annual slightly pubescent herb, branches 6-24 in., many, rooting.

1134. LOBELIA TERMINALIS Clarke; F. B. I. iii, 424, N. and E. Bengal,

A small suberect annual, 6-10 in. high, branches, n^{ot} rooting.

1135. LOBELIA TRIALATA Ham.; F. B. I. iii. 425.

Chota Nagpur.

A small, annual, glabrous herb, branches 6-^{1r} [^]n#j
ascending.

1136. LOBELIA RADICANS Thunb.; F. I. i. 507.

Chota Nagpur; naturalised near Ranchi.

A procumbent herb.

506. Campanumoea Bl.

Perennial herbs; root tuberous; stem erect or twining ^{ny sar} ^{^^}
mentose, with long, straight branches; *leaves* opposite ^{Flow} [^]
nate, short- or long-stalked, entire, crenate or serrate. ^{l con} ^{nate}
peduncled, solitary, lateral or terminal; bracts 0. ^{Scpabroad} ^o
in an inferior or superior calyx; limb with 4-6 long, ^{us} ^{ca}m-
narrow, persistent lobes. *Petals* connate in an epigy^{no} ^{vith} ^{ft}
panulate corolla, white with a short tube, or lurid, large, [^] [^] [^]
long tube; lobes 4-6. *Stamens* 4-6, inserted round ^{la} [^] ^{nta}s
corolla-tube. *Carpels* connate in a 4-6-celled ovary; ^{Pt lobes}
thick, many-ovuled; style cylindrical; stigma of 4-6 ^{snor} ¹ ^{ol} [^]
Fruit an indehiscent, truncate berry. *Seeds* numerous, el ip^s
small. ^{nu} ⁱ ^a

1137. CAMPANUMCEA CELEBICA Bl.; F. B. I. iii. 436. *Campa*
lancifolia F. I. i. 505.

Chittagong.

An erect perennial, 3-4 feet high, branches ^{hor} [^] ^{ori}
zontal, and drooping; leaves opposite, lanceola e.

507. Sphenoclea Gaertn.

An annual, erect herb; *leaves* alternate, lanceolate, ^{en} ^{tire} [^]
Flowers small, sessile, in lateral and terminal peduncled, ^{dense} [^]
cylindric spikes, with a conical apex; bracts distinct; bracte^{oles} [^]
Sepals connate in a half-superior calyx; limb 5-fid; lobes ^o ^{vate} [^]
Petals 5, connate in an epigynous, campanulate, 5-lobed coi^{olla} [^]
Stamens 5, adnate to corolla-tube, alternate with its lobes; ^{fila}
ments short, lin W; anthers ovate. *Carpels* connate in a 2-ce^{lled} [^]
ovary, at first ^{infed} [^]; placentas stalked; ovules very many
style short; stigma obscurely 2-lobed. *Fruit* a half-inferior cap^{sule} [^]
sule, membranous below, the crown above the calyx-limb har^d [^]

depressed-conical, circumscissile. *Seeds* numerous, narrowly oblong ; testa rather lax.

1138. SPHENOCLEA ZEYLANICA Gaertn.; F. I. i. 507; F. B. I. ii. 438.

In nearly all the provinces, in swamps.

An annual erect herb. *Beng.* Jhil-mirich.

508. Cephalostigma A. DC.

Small, erect, branched herbs, sparsely patently hairy; *leaves* alternate, subsessile, margin thickened, entire, waved or crisped. *Flowers* small, racemed or paniced; pedicels filiform; upper bracts very small. *Sepals* connate in a superior calyx; limb 5-partite. *Petals* connate in a deeply 5-fid corolla; segments linear-lanceolate, stellately patent, blue or whitish. *Stamens* 5, free from the corolla; filaments dilated at the base; anthers free. *Carpels* connate in a subglobose, 2-3-celled, inferior ovary; placentas many-ovuled; style cylindrical; stigma shortly obtusely 3-lobed. *Fruit* a loculicidally 2-3-valved capsule, opening within the persistent calyx-teeth. *Seeds* numerous, small, ellipsoid, compressed, or trigonous.

Seeds oblong-ellipsoid, compressed, not trigonous; calyx-tube patently hairy; teeth linear-lanceolate, nearly glabrous.....*Schimpen.*

Seeds distinctly trigonous :—

calyx-tube and linear-lanceolate teeth both patently pilose ...*hirsutum.*

Calyx-tube and shortly-triangular teeth both glabrous or nearly so

Hookeri

1139. CEPHALOSTIGMA SCHIMPERI Hochst.; F. B. I. iii. 428.

Chota Nagpur.

An erect, branching herb, 4-15 in. high.

1140. CEPHALOSTIGMA HIRSUTUM Edgew.; F. B. I. iii. 429.

Chota Nagpur.

A rather rigid herb, 1-5 in. high.

1141. CEPHALOSTIGMA HOOKERI Clarke; F. B. I. iii. 429.

•> Chota Nagpur.

An erect herb, 3-8 in. high.

509. **Wahlenbergia** Schrad.

Annual or perennial herbs; *leaves* alternate or opposite. *Flowers* on terminal or leaf-opposed, solitary or paniced

peduncles; bracts minute or 0. *Sepals* connate in a superior calyx; limb 5-partite. *Petals* 5, connate in a campanula* corolla, sometimes the lobes almost free to the base. *Stamens* 5, free from the corolla; filaments often dilated near the base; anthers oblong, free. *Carpels* connate in an inferior, turbinate, 2-3-celled ovary; placentas many-ovuled; style cylindrical; stigma of 8 narrow lobes. *Fruit* an erect, 2-3-celled capsule, opening loculicidally by 2-3 valves within the persistent calyx-teeth. *Seeds* very many, minute.

1142. WAHLENBERGIA GRACILIS DC.; F. B. I. iii. 429. *Campanula dehiscens* F. I. i. 504.

Chota Nagpur; Behar; Tirhut; N. Bengal; Chittagong.
A slender herb, simple or branched, usually glabrous.

510. Campanula Linn.

Perennial or annual, erect or decumbent herbs; *leaves* alternate, or the radical subrosulate, from ovate to linear. *Flowers* peduncled or sessile, axillary or terminal, paniced, spicate or subcapitate, purple or white; bracts minute or 0. *Sepals* connate in a turbinate calyx, adnate to the ovary; limb deeply 5-lobed, persistent. *Petals* 5, connate in a campanula*) corolla; limb shortly lobed. *Stamens* 5, free; filaments dilated at the base; anthers free. *Carpels* connate in an inferior ovary, 3- or rarely 4-5-celled; ovules numerous in each cell; style cylindrical; stigma shortly 3-5-lobed. *Fruit* an obovoid or elongated capsule, dehiscent by small valves at the base or on the sides below the calyx-lobes. *Seeds* very many, minute, ellipsoid or compressed and margined.

1143. CAMPANULA CANESCENS Wall.; F. B. I. iii. 439.

Chota Nagpur; Behar; Tirhut; N. Bengal.
An erect, hirsute herb.

Order LXXIY. YACCINIACEJE.

m ^ *l* *I*" *T* ^{1 1} trees, sometimes epiphytic, with the stem
wh^{entire} thickened at the base. *Leaves* alternate or spuriously
««£' *T* ^{SCrrate}; *Stigules* «« *F*TM**" hermaphrodite,
often a ^{b ^ m} or ^{Solitar*} axil *W*>- *P*^icels 1-bracteate and
the ^{ovln} ^f *T**> ^{freqUentl*} thickened and articulate beneath
ovary. *Sepals* connate in an ovoid calyx-tube, adnate to the

ovary; limb 5-fid, rarely entire, usually persistent. *Petals*, connate in a tubular or urceolate 5-toothed or shortly campanulate 5-fid, deciduous corolla. *Disk* epigynous. *Stamens* 10, epigynous, free ; anthers subbasally dorsifixed ; cells opening by apical pores, often produced upwards into 2 tubes, opening by apical chinks; connective sometimes spurred behind. *Carpels* 5, connate in an inferior 5-celled or spuriously 10-celled ovary; ovules usually many at inner angles of cells; style cylindric; stigma simple. *Fruit* a 5- or falsely 10-celled berry, rarely dry and indehiscent. *Seeds* several or many, rarely one in each cell, small, compressed; albumen fleshy; embryo minute, clavate.

511. Agapetes D. Don.

Shrubs, often epiphytic; stems often greatly thickened at the base; *leaves* alternate, sometimes falsely whorled, from linear to elliptic, entire or toothed, sessile or shortly petioled, often with glands at the apex of the petiole, usually coriaceous. *Flowers* axillary, corymbose, fascicled or solitary; pedicel often thickened or articulate under the ovary ; bracts small. *Sepals* connate in a globose calyx, with a persistent 5-fid or 5-partite limb. *Petals* 5, connate in a shortly or deeply 5-lobed corolla; red, but often with transverse marks or the lobes greenish-white. *Stamens* 10; filaments usually short; anthers elliptic, produced upwards in 2 long beaks opening by apical pores or slits, often spurred behind. *Carpels* connate in a 5-celled or spuriously 10-celled inferior ovary ; ovules very many at the inner angles of the cells ; style cylindric ; stigma capitate. *Fruit* a globose, succulent, or almost dry berry, 5-celled or spuriously 10-celled, often opening by 10 pores round the disk within the calyx-teeth. *Seeds* very many, ellipsoid, with very lax testa.

Anthers with spurs on their beaks.....*variegata*.
 Anth[^] without spurs on their beaks.....*macrantha*.

1144. AGAPETES VARIEGATA D. Don; F. E. I. iii. 446.

Chittagong.

An epiphytic shrub. Beng. Jalainut.

1145. AGAPETES MXVCRAHIA Hook. f.; F. B. I. iii. 446. *Cerato-*

sterna variegatum F. I. ii. 413.

Chittagong.

An epiphytic shrub. Beng. Jalarnut.

Order LXXY. PLUMBAGINEJE.

< Herbs, undershrubs, or shrubs. *Leaves* rosulate or alternate, petiolé sometimes dilated and stem-clasping below. *Floivers* hermaphrodite, regular, in terminal scapes or peduncles, capitate, racemed or paniced ; bracts often with scarious margins; usually sheathing the flowers; bracteoles 2. *Sepals* connate in an inferior, tubular, 5-10-ribbed calyx, often hyaline between the ribs; limb frequently funnel-shaped, scarious. *Petals* 5, free, or connate at the base in a short tube to which the filaments are adnate, rarely connate in a linear tube; lobes imbricate, spreading. *Stamens* 5, opposite the petals; filaments adnate below to the corolla, or nearly free ; anthers oblong, dorsifixed ; cells parallel.; dehiscence longitudinal. *Dish* 0. *Carpels* connate in a superb 1-celled ovary, 5-angled above ; ovule solitary, anatropous, pendulous from an ascending basal funicle; styles 5, free or connate below; stigmas subcapitate. *Fruit* a membranous or partial coriaceous capsule, included in the calyx or exserted; circumscissile or rupturing near the thin base, the hardened apex open. 5-valved. *Seed* cylindrical, pendulous; albumen floury or 0> embryo straight.

Styles 5, distinct; stigmas subcapitate ; stamens shortly united at the base into a tube with the corolla ; a large shrub..... £Jgialit*;
Style 1, filiform, divided into 5 stigmatose branches; stamens free.
herbs or undershrubs. plumbago*

512. *Eyialitis* R. Br.

A glabrous shrub; *leaves* alternate, broad, coriaceous; petiole dilated at the base, stem-clasping. *Flowers* in paniced racemose-bract sheathing the pedicel and enclosing the two bracteoles. *Sepals* connate in a tubular, coriaceous, 5-ribbed calyx 5-^{lm} Bhortly 5-toothed. *Petals* imbricate, white, connate below, anther agnate to filaments, in a persistent tube, deciduous above the tube. *Stamens* 5; anthers oblong. *Carpels* connate in a 1-celled ovary; styles 5 distinct projecting from the angles of the ovary; stigmas capitate. *Fruit* a linear, exserted capsule-

dehiscence longitudinal at angles. *Seed* solitary, elongated; albumen 0.

1146. & u m i EOTnNDIrouA Eoxb.; F. I. ii. III; *. B" J>
m. 479; E.D.A.529.

Sundribuns.

A glabrous shrub of mangrove-swamps, with broad, coriaceous leaves, and a stem-clasping, dilated petiole*

513. Plumbago Linn.

Herbs or undershrubs, diffusely branching; *leaves* alternate, entire. *Flowers* spicate; bracts and 2 bracteoles short. *Sepals* connate in a tubular calyx, covered with stalked glands; limb 5-fid. *Petals* 5, connate in a long, slender, tubular corolla; lobes round, patent. *Stamens* 5, free; filaments linear, dilated at the base; anthers oblong. *Carpels* connate in an ovary, narrowed at the base; style slender, with terminal branches, stigmatic nearly throughout their length. *Fruit* a membranous capsule, circumscissile near the base. *Seed* solitary; albumen scanty.

Leaves ovate, suddenly narrowed into the petiole; rachis of spike pubescent or glandular; corolla white; base of style glabrous...*zeylanica*.
Leaves elliptic, tapering to the short petiole; rachis of spike glabrous; corolla red; base of style hairy.....*rosea*.

1147. PLUMBAGO ZEYLANICA Linn.; F. I. i. 462; F. B. I. iii. 480; E. D. P. 986.

In most of the provinces, as if wild; but usually cultivated.

A rambling herb. *Vernac.* Chita, chitra.

1148: PLUMBAGO ROSEA Linn.; F. I. i. 462; F. B. I. iii. 481; E. D. P. 979.

Cultivated in all the provinces; as if wild only in Chittagong.

A rambling herb. *Vernac.* Lal-chita, rakto-chitra.

Order LXXYI. PRIMULACEJE.

Perennial, rarely annual herbs. *Leaves* all radical, or, if cauline, opposite, alternate, or whorled; stipules 0. *Flowers* hermaphrodite, regular, small or large, axillary, solitary, or racemose, or solitary or umbellate at the apex of an elongated scape; bracts variable, sometimes obsolete or 0. *Sepals* connate in an inferior 5-, rarely 4-9-cleft calyx, rarely superior. *Petals* connate in a kypogynous, very rarely superior, rotate, campanulate or funnel-

[Androsace.

shaped tube; limb 5-, rarely 4-9-cleft; lobes imbricate contorted; corolla very rarely 0. *Stamens* on the corolla, opposite its lobes, or hypogynous where corolla 0, with 2-celled alternating staminodes; filaments usually short; anthers dehiscence longitudinal. *Carpels* connate in a 1-celled ovary almost always superior; ovules many, usually amphitropous on a free-central placenta; style long or short; stigma entire. *Seeds* few or many, usually angular, often sunk in the placenta, albumen fleshy or horny; embryo transverse.

Corolla-lobes imbricated; capsule dehiscing by valves Androsace.

Corolla-lobes contorted; capsule circumscissile:—

Corolla 5-partite, longer than the calyx; leaves opposite ... Anagallis.

Corolla 4-5-lobed, shorter than the calyx; leaves alternate Centunculus.

514. Androsace Linn.

Perennial, rarely annual, low herbs; leaves rosulate or imbricate on the branches. *Flowers* small, red or white. *Sepals* connate in a 5-lobed or 5-partite calyx. *Petals* connate in a short, salver-shaped or funnel-shaped corolla; limb 5-lobed, annulate or with folds opposite the lobes. *Stamens* 5, subsessile, included in the tube, obtuse. *Carpels* connate, globose ovary; style short. *Fruit* an ovoid or globose, capsular. *Seeds* 2, rarely more, angular or subglobose, transverse.

1149. ANDROSACE SAXIFRAGIFOLIA Bunge; F. B. I. 496.

Tirhut; N. and C. Bengal.

An annual herb.

515. Anagallis Tournef.

Slender annual or perennial herbs; leaves opposite, quincuncial; bracts 0. *Sepals* connate in a 5-partite calyx. *Petals* 5, connate in a rotate, 5-partite corolla. *Stamens* 5, adnate to cordiform filaments villous. *Carpels* connate in a globose ovary in a filiform; ovules many. *Fruit* a globose, circumscissile capsule. *Seeds* many, peltate, plano-convex.

1150. ANAGALLIS ARVENSIS Linn.; F. B. I. 606; A. 1034.

Tirhut; Behar; Chota Nagpur; N. and C. Bengal,
An annual procumbent herb with opposite, gland-dotted
leaves and *blue* flowers. The scarlet-flowered form of
the Pimpernel has not been met with in our area.

516. *Centunculus* Linn.

Small annual herbs; *leaves* alternate or subopposite. *Flowers*
minute, solitary, axillary, white or pink; bracts 0. *Sepals* con-
nate in a 4-5-partite calyx. *Petals* 4-5, connate in a short,
urceolate corolla. *Stamens* 4 or 5, adnate to throat of corolla;
filaments flattened; anthers exerted. *Carpels* connate in a sub-
globose ovary; style filiform; ovules numerous. *Fruit* a globose,
circumscissile capsule. *Seeds* many, peltate.

1151. CENTUNCULUS TENELLUS Duby; F. B. I. iii. 506.

Behar; W. Bengal; Chota Nagpur.

A very small annual herb.

Order LXXYII. MYRSINEJE.

Shrubs or small trees. *Leaves* alternate, undivided, generally
gland-dotted; stipules 0. *Flowers* regular, hermaphrodite or
polygamo-dioecious, in cymes, racemes, or umbels. *Sepals* con-
nate in an inferior calyx, rarely somewhat adnate to ovary; limb
usually 5-, sometimes 4- or 6-lobed, persistent, sometimes slightly
accrescent. *Petals* connate in a short tube or free; 3-7 (usually
5), contorted or imbricate, rarely valvate. *Stamens* 3-7, opposite
the corolla-lobes, free or adnate to the tube, very rarely with
alternating staminodes; anthers usually oblong, acute; usually
free, sometimes connate by their margins; dehiscence longi-
tudinal, rarely porous. *Carpels* connate in an oblong, free, or rarely
half-inferior, 1-celled ovary, tapering upwards into the style;
ovul[^] many, on a free central placenta; style filiform or columnar;
stigma simple or rarely shortly lobed. *Fruit* a small, globose,
indehisr[^]nt, 1- or, less often, several-seeded berry, rarely
i/Egiceras) a linear, acute, one-seeded follicle. *Seeds* usually
globose, excavated at the base; albumen pitted or rumihate;
embryo transverse.

"Calyx nearly enclosing the many-seeded berry; seeds albuminous
[p. 642].....Mesa.

Maesa.

*Calyx free from the 1-seeded fruit:—[p. 641]

Fruit a globular drupe ; anthers not transversely chambered ;
in racemes or panicles; seed spherical, albuminous:—

Corolla-lobes imbricate in bud, or if (rarely) contorted the anthers
not longer than the filaments, the ovules few, and the stems
climbing; flowers very small.

Corolla-lobes contorted in bud ; anthers longer than the
ovules many ; stems erect.

Fruit a dry, curved, cylindric, irregularly opening follicular
anthers transversely chambered; flowers in umbels; seed elongated
germinating on the tree, exalbuminous.

Ardisia.
filaments;
drup
#g

517. *Maesa* Forsk.

Trees or shrubs; leaves entire or serrate. Flowers small, hermaphrodite or 1-sexual, 4-5-merous, in axillary or terminal racemes; bracts at base of pedicels small; bracteoles 2. Stamens connate in a half-inferior or sometimes almost free calyx, semi-adnate in fruit; teeth 4-5, small, persistent. Petals connate in a small, campanulate, gamopetalous corolla; lobes 4-5, round much imbricate, sometimes unequal. Stamens 5, inserted on corolla-tube; filaments short; anthers ellipsoid ; staminodes 4. Carpels connate in an ovary, adnate below to the calyx; styles short, often sulcate; stigma capitate or shortly 3-5-lobed; ovules numerous on a globose, central, free placenta. Fruit a small, globose berry, dry or fleshy. Seeds numerous, subtrapezoid.

Leaves entire ; racemes compound, often longer than the leaves?

Leaves with 1-3 teeth to each primary nerve; racemes compound, shorter than the leaves.

ramentacea.
if

1152. *MAESA RAMENTACEA* A. DC.; F. B. I. iii. 508. *Bceobotrya* *ramentacea* F. I. i. 558.

Chittagong.

An erect tree, 30 feet high.

1153. *MAESA INDICA* Wall.; F. B. I. iii. 509; E. D. M. 40. *Botrys indica* F. I. i. 557. *B. nemoralis* F. I. i. 59.

Chittagong.

A shrub, a small tree. Beng. Ramjani; Magh. Tamomban.

Bao.
Magh.

518. Embelia Burm.

Shrubs, usually sarmentose, or small trees; *leaves* entire or toothed; petiole often margined or glandular. *Flowers* small, polygamous, mostly dioecious, white or greenish-yellow, in axillary or terminal, simple or compound racemes, or subfasciated; bracts usually small; bracteoles 0. *Sepals* connate in a small, free, persistent, 5-lobed or 4-lobed calyx. *Petals* 5 or 4, free or slightly connate at the base, elliptic, imbricate or rarely contorted in bud, *Stamens* 5 or 4, the filaments opposite and more or less adnate to the petals; anthers ovate-oblong. *Carpels* connate in an ovoid or globose, rarely conic ovary; style cylindrical; stigma capitellate; ovules few. *Fruit* a small, globose, 1-seeded or rarely 2-seeded berry. *Seed* globose, with hollowed base; albumen subruminate, pitted; embryo curved.

Leaves glabrous, entire; inflorescence terminal as well as axillary; panicles grey-pubescent; pedicels longer than the flowers and fruits; filaments short and thick.....*Bibes*.

Leaves pubescent beneath, at least on the nerves, undulate or obscurely serrulate; inflorescence axillary only; racemes rusty-pubescent; pedicels shorter than the flowers and fruits; filaments slender, longer than anthers.....*robiista*.

1154. EMBELIA EIBES Burm.; F. I. i. 586; F. B. I. iii. 513; E. D. E. 199.

Chittagong.

A scandent shrub. *Hind.* Baberang; *Beng.* Bhai-
« birrung.

1155. EMBELIA ROBUSTA Roxb.; F. I. i, 586; F. B. I. iii. 515; E. D. E. 202.

Behar; Chota Nagpur; W. Bengal; E. Bengal, Mymensingh.

A large, rambling shrub, or small tree with sprawling branches. *Hind.* Baberang; *Beng.* Bhai-birrung; *Uriya* Baibidanga.

519. Ardisia Sw.

Shrubs or small trees; *leaves* petioled. *Flowers* hermaphrodite, in axillary or terminal, simple or compound umbels or racemes; bracts small, deciduous, very rarely persisting. *Sepals* connate

in a 5-lobed, rarely 4-lobed calyx, persistent and sometimes accrescent in fruit. *Petals* connate in a red, white, or speckled 5-partite corolla; lobes acute, twisted to the right in bud. *Stamens* 5; filaments very short, adnate to corolla; anthers free, ovate-lanceolate, acute. *Carpels* connate in a globose ovary, narrowed to the apex; style cylindric, often exceeding the corolla-lobes; stigma small, terminal; ovules few. *Fruit* a globose or subglobose, 1-seeded berry. *Seed* globose; albumen pitted or ruminant; embryo transverse.

Flowers in truly or spicuously ^{^^ ^ ; ^} -
 Panicle ^{terminal, at least twice} divided, their branches more or less flattened; pedicels densely umbelled; leaves entire :-
 leaves coriaceous, decurrent on the stout petiole, the main-nerves diverging at an acute angle; panicle almost glabrous, its branches angular; calyx-lobes small, round *pmieu* Wa.
 Leaves ^{thickly chartaceous, not decurrent, the main-nerves diverging} almost ^{elliptic-oblong} *colorata* var. *complanata*.
 Panicle ^{appearance} ^{the axis of a branch ending in an apical tuft of reduced leaves, between which and the normal leaves} ^{several} ^{bearing} ^{leaves distinctly} ^{crenulate}; calyx-lobes narrow, acute *Kara*.
 Panicle ^{lower peduncled, but without} ^{leaves and flowers glabrous;} ^{margin of leaves entire or subentire :-}
 Leaves ^{obovate-lanceolate}, primary nerves conspicuous beneath;
 Leaves ^{obovate-oblong or elliptic; nerves slender; branches glabrous} *kka^na* var. *Thorn****.
Ardisia.

1156. ARDISIA PANICULATA Roxb.; F. B. I. iii. 519; & V. A. 1292.

E. Bengal; Chittagong.
 A large shrub.

1157. ARDISIA ^{T^} ^{Roxb, var,} COMPLANATA Clarke; F. B. I. iii. 520; E.D. A. 1284.

Chittagong.
 A small tree.

1158. A ^{t t w S} ^{UALLA} ^{OH a p}; F. B. I. iii. 523.

E. Bengal ^{ymens^gh,}
 A large *shtni*,

1159. *ARDISIA KHASIANA* Clarke var. *THOMSONI* Clarke; I? B. I. iii. 527.

Chittagong.

A small erect shrub, 1-4 feet high.

1160. *ARDISIA HUMILIS* Vahl; F. B. I. iii. 529; E. D. A. 1288.
A. solanacea F. I. i. 580.

In almost every province.

An erect, branched shrub, sometimes almost tree-like.

Beng. Ban-jám ; *TJriya* Kudna; *Hind.* Bisi.

520. *JEGICERAS* Gaertn.

A small, glabrous tree, with cylindric branches; *leaves* alternate, petioled, obovate, entire, coriaceous, 1-nerved. *Flowers* hermaphrodite, white, with filiform pedicels, in sessile, axillary, terminal or leaf-opposed umbels; bracts 0. *Sepals* connate in a 5-lobed calyx; lobes imbricate. *Petals* 5, connate below in a short tube, free above, acute, twisted to the right in bud. *Stamens* 5, adnate to corolla-tube ; filaments linear, hirsute at base; anthers cordate-lanceolate, with longitudinal dehiscence; cells transversely septate. *Carpels* connate in an oblong ovary, narrowed into a filiform style; stigma minute, terminal; ovules many, immersed in a globose, central placenta. *Fruit* a cylindric, curved, acute, coriaceous, striated, 1-seeded follicle. *Seed* conform to the fruit, germinating within the pericarp; albumen 0; radicle inferior, much elongated, enlarged at the base ; cotyledons very short.

1161. *JEGICERAS MAJUS* Gaertn.; F. I. iii. 130; F. B. I. iii. 533 ;
E. D. A. 531.

Orissa, Mahanadi Delta; Sundribuns.

A large shrub or small tree in mangrove-swamps.

Vernac. Halsi, khalsi.

Order LXXYIII. SAPOTACEJE.

Trees" or shrubs; young parts often rusty-tomentose. *Leaves* alternate or rarely subopposite, petioled, entire, coriaceous; stipules 0 or very caducous. *Flowers* hermaphrodite, small or medium, axillary ; pedicels clustered, rarely solitary, very rarely paniced ; bracts 0 ; bracteoles 0 or minute. *Sepals* connate in a calyx, with 4-8 much-imbricate lobes, subequal or the inner larger,

sometimes distinctly 2-seriate, the inner row imbricate, the outer valvate, persistent. *Petals* connate in a tube, shorter than the calyx, the lobes equal, as many or 2-4 times as many as calyx-lobes. *Stamens* inserted on the corolla-tube, 1-seriate, and as many as and opposite the corolla-lobes, or 2-3-seriate and twice or thrice as many as corolla-lobes; filaments usually short; anthers oblong-lanceolate, connective often produced; staminodes, when present, alternate with stamens and corolla-lobes. *Carpels* connate in a superior, sessile, 2-8-celled ovary; ovules solitary in each cell, usually arising from inner angle; style subulate; stigma minute. *Fruit* a 1-8-seeded berry. *Seeds* ellipsoid or, especially if more than one, compressed; testa usually crustaceous; hilum long; albumen 0 and embryo with fleshy cotyledons, or fleshy and embryo with flat cotyledons; radicle small.

Corolla-lobes and calyx-lobes equal in number :-

Calyx-segments in one series only; parts of the flower in whorls of 5; Stamens as many as petals; staminodes as many as stamens and alternating with them; seeds not albuminous :-

Flowers sessile in branched panicles; ovary glabrous; cells 1-2

..... **Sarcosperm***

Flowers pedicelled in axillary fascicles; ovary villous; cells 4-5

..... **Sideroxylon.**

Segments in two distinct series; parts of the flower in whorls

Stamens as many as petals; staminodes as many as stamens and alternating with them; ovary-cells twice as many as petals; seeds albuminous..... **Achras.**

Stamens many as petals; seeds not albuminous..... **Dichopsis-**

Corolla-lobe ^{more} than calyx-lobes; ovary-cells as many as calyx-lobes..... **H...**

Staminodes none; stamens about 2-3 times as many as corolla-lobe* in 1-3s; seeds not albuminous 8-14; calyx-lobes and ovary-cell or 6; seeds not albuminous ... **BUasJ»»**

albuminous ... Series; ovary-lobes and ovary-cells 6 or 6; ^s **MimusopB-**

821. Sarcosperma Hook. f.

- **H p X ' e a S i** oblong, acuminate, coriaceous, toward small, fascicled on the branches of

simple or compound panicles; bracteoles minute. *Sepals* Q, connate below, orbicular, subequal, strongly imbricate. *Petals* 5, connate below in a short tube, orbicular, imbricate. *Stamens* 5, adnate to corolla-tube; filaments short; anthers oblong, obtuse; staminodes 5, small, oblong-linear. *Carpels* connate in a glabrous, 2- or 1-celled ovary; ovules ascending; style cylindrical. *Fruit* a large, ellipsoid berry, 2-celled or 1-celled. *Seeds* 2 or solitary; testa crustaceous; hilum nearly basal; albumen 0; embryo fleshy.

1162. SARCOSPERMA ARBOREUM Hook. f.; F. B. I. iii. 535; E. D. S. 877.

N. Bengal, Duars.

A large, spreading tree.

522. Sideroxylon Linn.

Trees; *leaves* alternate, lanceolate, elliptic, or obovate; stipules 0. *Flowers* small, in axillary fascicles, subsessile or shortly pedicelled; pedicels more or less hirsute; fascicles sometimes in axillary racemes; bracteoles minute or 0. *Sepals* 5, connate below, subequal, much imbricated. *Petals* 5, connate in a campanulate tube; lobes imbricate. *Stamens* 5, attached to base of corolla-lobes; filaments short or linear; anthers ovate or lanceolate; staminodes 5, lanceolate, alternate with corolla-lobes. *Carpels* connate in a villous, or rarely almost glabrous 5-celled, more rarely 4-2-celled ovary; style cylindrical, short or long. *Fruit* an ovoid or globose berry, with usually 4 or 5, but sometimes 3, 2, or 1 seeds. *Seeds* usually oblong, much compressed; testa hard; hilum long; albumen fleshy; embryo with leafy or almost fleshy cotyledons.

1153. SIDEROXYLON TOMENTOSUM Eoxb.; F. I. i. 602; F. B. I. iii. 538; E. D. S. 1718.

Behar; W. Bengal; Chota Nagpur; Orissa.

A considerable tree. *Uriya* Eanta buhol.

523. Achras Linn.

An evergreen tree; *leaves* petioled, clustered at ends of branches, coriaceous, shining, glabrous or sparsely hairy; stipules 0. *Flowers* rather large, usually solitary, on axillary pedicels; bracts 0. *Sepals* 6, connate below, free and biseriate above, the 3 outer subvalvate, enclosing the 3 imbricate inner. *Petals* 6, con-

nate in a wide, almost urceolate corolla; lobes imbricate, almost contorted. *Stamens* 6, adnate near base of corolla, opposite lobes; filaments slender, reflexed above; anthers lanceolate; staminodes 6, petaloid, alternate with and nearly as long as corolla-lobes. *Carpels* connate in a villous, 10-12-celled ovary; style cylindrical or thickened in the middle, glabrous; stigma few. *Fruit* a fleshy berry, globose or 5-angled. *Seeds* usually oblong; hilum lateral; testa hard; albumen fleshy; embryo thick, flat cotyledons.

1164. ACHRAS SAPOTA Linn.; F. B. I. iii. 534; E. D. A. 376.

Cultivated.

A medium tree, native of America, cultivated in the East Indies. **edible fruit.** *Vernac.* Sapota (from the American name). The Sapota.

524. Dichopsis Thwaites.

Trees; shoots rusty-tomentose; leaves obovate or petioled, coriaceous; stipules 0. *Flowers* fascicled, axillary on the naked branchlets below a terminal tuft of leaves; petals 6-celled. *Sepals* 6, connate below, free and biseriata above; three outer lobes valvate, enclosing the 3 imbricate inner. *Stamens* 12, attached near base of corolla, or alternately opposite lobes and near the base and alternate with the lobes and anthers up, occasionally from 13-18; filaments short or long; anthers lanceolate, connective produced, acute or 2-fid, staminodes 0. *Carpels* connate in a villous, usually 6-celled ovary; style 1. *Fruit* a fleshy, ellipsoid, or ovoid berry. *Seeds* 2 or 3; testa crustaceous; albumen 0; cotyledons large, fleshy.

1165. DICHOPSIS POLYANTHA Hook, f.; F. B. I. iii. 542; E. D. A. 392.

Chittagong.

A tree, 30-40 feet high, said to yield a good gutta-percha. *Beng.* Tali.

525. Bassia Linn.

Deciduous trees; leaves petioled, coriaceous, silky or tomentose beneath when young, clustered at ends of branches; stipules caducous. *Flowers* on axillary pedicels, among the clustered leaves or in the axils of fallen leaves. *Sepals* 4, 2-seriate above,

connate at base, the two outer valvate, enclosing the inner overlapping pair, very rarely 5, imbricate. *Petals* connate in a campanulate tube; lobes 6-12, usually 8 or 10, contorted in bud. *Stamens* at least twice as many as the corolla-lobes, from 12-40, but usually 16-20; anthers lanceolate, acute, connective often mucronate or excurrent. *Carpels* connate in a villous ovary; style linear; cells 4-12, but usually 6 or 8. *Fruit* a globose, oblong or ellipsoid, 1-3-, rarely 4-5-seeded berry. *Seed* ellipsoid; hilum long; albumen 0; cotyledons fleshy, semi-ellipsoid.

1166. *BASSIA LATIFOLIA* Koxb.; F. I. ii. 526; F. B. I. iii. 544; E. D. B. 220.

W. Bengal; Behar; Chota Nagpur; Orissa.

A tree, 50 feet high. *Hind.* Mahua; *Beng.* Mahwa, mahula; *Uriya* Moha; *Santal.* Matkom; *Kol.* Man-kadum. The Mahua.

526. *Mimusops* Linn.

Trees; *leaves* elliptic or obovate, coriaceous; primary nerves many, subparallel, spreading from the midrib, slender or obscure. *Floiuers* axillary, pedicelled, solitary or fascicled. *Sepals* 6 or 8, connate below, free and 2-seriate above; outer lobes 3 or 4, valvate, the inner 3 or 4 imbricate. *Petals* connate in a short tube; lobes 2-3-seriate, from 18-24. *Stamens* 6-16, usually either 6 or 8, inserted near base of corolla, opposite the lobes of the inner series; filaments short; anthers lanceolate, connective excurrent; staminal nodes as many as the stamens, entire or serrate or lobed. *Carpels* connate in a hirsute, 6-8-celled ovary; style cylindrical. *Fruit* a globose berry with crustaceous endocarp. *Seeds* 1-6, compressed, ellipsoid; albumen fleshy; cotyledons flat, often nearly as wide as the seed.

• 1167. *MIMUSOPS ELENGI* Linn.; F. I. ii. 236; F. B. I. iii. 548; E. D. M. 570.

Cultivated generally.

A tree 50 feet high, with spreading branches. *Hind.* Malsari; *Beng.* Bakul; *Uriya* Baulo. Elengi.

Order LXXIX. EBENACEJE.

Trees or shrubs, wood usually hard and heavy. *Leaves* alternate, rarely subopposite, entire, usually coriaceous; stipules 0.

Flowers usually dioecious, regular, axillary, sessile, or shortly cymose, usually bracteate; pedicels articulate. *Sepals* connate in an inferior calyx; lobes 3-7, valvate, imbricate, or contorted, often accrescent. *Petals*- connate in a variously shaped tube; lobes 3-7, contorted, or less often imbricate or valvate. *Stamens* in <r and <? flowers 1-seriate and as many as corolla-lobes, or 2-more-seriate and 2-several times as many; filaments shorts' than anthers, free or paired or variously connate below; anthers narrow; dehiscence longitudinal, rarely apical, connective often apiculate; in ? flowers stamens absent or reduced to staminodes, with abortive or empty anthers. *Dish* 0. *Carpels* in * flowers reduced to an abortive ovary or absent; in <? or ? flowers connate in a superior sessile ovary with 2-8 styles, the cells as many or twice as many as the styles, imperfectly septate ; ovules twice as many as the styles, pendulous, anatropous, attached to inner angles of cells. *Fruit* a coriaceous or fleshy berry, several- or few-seeded. *Seeds* pendulous, usually oblong, longitudinally 2-3-lurrowed; testa thin; albumen copious, uniform or ruminated; embryo axial; radicle superior.

Flowers 3-merous; ovary 3- or 6-celled..... Maba "
 Flowers 4-5-merous ; ovary 4-5- or 8-10-celleiT"!'!".....**Diospyros**

527. Maba Foist.

Trees or shrubs; *leaves* alternate, entire. *Flowers* dioecious, axillary, short-pedicelled, or in small, dense cymes; whorls usually 3-merous, rarely 4-5-merous. *Sepals* 3, less often 4-5, connate in a 3-5-fid or -partite, rarely subtruncate calyx, often cupuhform and enlarged fra frufic> p 3j connattee below in * tube usually longer than the calyx, free above, contorted' dextrorsely in bud. *Stamens* 3-22; filaments distinct or paired or polyadelphous; anthers oblong. *Ovary* rudimentary.. -? **SIT T f VV** Car * elks amma ^ a 3-celled or imperfectly or perfectly 6-celled ovary ; ovulea 6: st-les or style: arms 3: Fr ^ **1168 SL** dry or fl" ^ f PSoid, glabrOUS or hair ^ **W o d W** and 1-6-seeded, **Seeds With e *TMA ^ bumen.** **3.**

*erreou buxifoH*a F. I. Ui. 790.

Orissa, in dry hills.

A small tree. *Uriya* Guaholi, pisina.

528. Diospyros Linn.

Trees or rarely shrubs; *leaves* alternate or, rarely, subopposite, entire. *Flowers* dioecious, very rarely -polygamous, axillary and short-pedicelled or in small cymes, sometimes the males, often the females solitary; usually 4-5-merous, rarely 3-merous. *Sepals* connate in a frequently deeply lobed, rarely truncate calyx, often in the female larger than in the male, and often accrescent and plicate or auriculate in fruit. *Petals* connate in a shortly or deeply lobed tubular, hypocrateriform, or campanulate corolla; lobes contorted to right in bud. *Stamens* 4-64, often 16; filaments distinct, paired, or polyadelphous; anthers linear, rarely short. *Ovary* rudimentary. *Staminodes* 0-16. *Ovary* 4-5-celled or imperfectly or perfectly 8-10-celled; cells usually 1-ovuled, rarely 2-ovuled; styles or stigmas 1-4. *Fruit* a globose, ellipsoid, or ovoid-conic berry, often supported by the enlarged and sometimes woody calyx; flesh often pulpy or viscid. *Seeds* oblong, usually compressed; albumen equable or rarely ruminant.

*Female flowers solitary or subsolitary; if more than 2 together (*D. ovalifolia*, 2-6; *D. Embryopteris*, 1-5), then clustered, sessile :—[p. 652]

Calyx irregularly, or if regularly, then, at least in the male flower, very shortly cleft; corolla urceolate, glabrous externally; stamens usually more than 24; male flowers in small cymes; mature leaves glabrous beneath:—

Calyx in bud globular and closed, the lobes connate, but afterwards rupturing irregularly into 2-3-lobes; corolla 5-lobed; stamens about 32, glabrous; ovary hairy, 4-(rarely 6-)celled; stigmas 4, sessile; fruit*-7-1 in. across, ellipsoid, villous, but at length glabrate

Toyosia.

Calyx in bud not closed, in the male short, subtruncately 4-toothed, in the female large, deeply 4-lobed; corolla 4-lobed; stamens 24-64, pilose; ovary glabrous, 8-celled; styles 4; fruit usually solitary, 1-1.5 in. across, subglobose, glandular or rusty. *Embryopteris.*
Calyx regularly and deeply cleft, at least in the male flower, and usually in the flowers of both sexes (angled only in female calyx of *D. tomentosa*); stamens usually fewer than 24 :—

Corolla urceolate, glabrous or nearly so externally, if pilose [*D. Kaki*] then only so on the lobes; calyx-lobes 4, ovate; fruit globose:—[p. 652]

Ovary glabrous; fruit glabrous; stamens 16 :—[p. 652]

Male flowers in small fascicles, subsessile; corolla small, nearly

glabrous without; stamens glabrous; ovary 4-celled; ^{TXI^t} small, -3 in. across ; leaves hairy beneath.....*Chloroxyloides* ^{l' :} Male flowers in cymes, shortly pedicelled ; corolla rather nuge »
 ovary 8-celled:—

Corolla quite glabrous externally; stamens glabrous; ^{fruit} distinctly pedicelled:—

Leaves glabrous beneath, glaucescent; fruit "5-75 in. across; an armed tree.....

Leaves pubescent beneath; fruit 1-15 in. across; an un-armed tree..... *montana* var. *cordtjoiu* [^]

Corolla-tube glabrate; lobes pubescent externally; ^{stame} pilose; fruit sessile, 2-3 in. across, edible; leaves ^{pubescent,} reticulated beneath..... ^{Kaki.}

{Ovary hairy; fruit glabrescent; stamens 13-22, glabrous, ^{or} sparsely pilose ; mature leaves glabrous beneath or nearly s [p. 651]

Male flowers in small fascicles, sessile; calyx-lobes ^{lt 1(1.} de ^{g ^»} stamens 13-20, quite glabrous ; ovary 2-6-celled ; fn^{cs} ^{Vol ^.} *fjether*) -7 in. across ; leaves quite glabrous beneath...*ova* ^{y ded^}

Male flowers in cymes, shortly pedicelled ; calyx-lobes ^{lled>} stamens 13-22, glabrous or sparsely pilose; ovary 6-8-ce ^{tica>} fruit -5 in. across; leaves almost glabrous..... ^{SIJ^ va ^.}

t Corolla tomentose or densely woolly both on lobes and tube e nally:-[p.651]

Male flowers in small fascicles, sessile ; calyx 4-lobed, ^{lo ^} ovate-apiculate; corolla salver-shaped, tomentose; ^{staineGS} 16, glabrous; fruit ellipsoid, glabrous, narrowed at the ^{base>} 1-25 in. long, 75-1 in. wide ; leaves sparsely pilose beneath ^{cta.}

Mule flowers in cymes:—

Calyx in male flowers funnel-shaped, 4-5-lobed; lobes TM in female dissimilar, 4-5-angled; corolla urceolate, den ^{sely} rusty-woolly; stamens 16; filaments glabrous, but ^{conneC} fulvous-pilose on the back; styles 2-3, bifid; leaves ^{large,} ovate, dull, young hairy, mature glabrous above ^{hary b e n g a t h ;} fruit globose, smooth, 1 in. across..... ^{towe n t o s t .}

Calyx deeply 4-lobed; corolla tubular, densely villous; ^{stame n s} 22-24, quite glabrous; styles 4; leaves large, oblong; ^{cu te >} shining, glabrous above, silvery-silky beneath ; fruit ellip ^{so i ^} hairy, 2-5 in. long, 2 in. wide..... ^{disCol}

-Female ^{flowers} in many-flowered cymes, much longer than cymes; calyx' 5-lobea nearly half-way down; corolla tubular, v ^{lilous} externally; stamens 16, glabrous; ovary hairy, 8-12-celled; sti ^{gnas}

4-6 ; fruit globular, glabrous, 2-3 in. across ; leaves broad-oblong, p.cute, large, glabrous [p. 651].....*ramiflora*.

1169. DIOSPYROS TOPOSIA Ham.; F. B. I. iii. 556; E. D. D. 664.

D. racenwsa F. I. ii. 536.

Chittagong.

A large or medium tree; leaves oblong, acuminate, coriaceous, alternate. *Vernac.* Gúlu.

1170. DIOSPYROS EMBRYOPTERIS Pers.; F. B. I. iii. 556; E. D.

D. 582. *D. glutinosa* F. I. ii. 533.

In all the provinces.

A dense tree; leaves oblong, obtuse, or subacute, rounded or truncate at the base, coriaceous, alternate.

Hind, and *Beng.* Gáb, makurkendi, téndú ; *Uriya* Gusvakendhu; *Santal.* Makarkenda.

1171. DIOSPYROS CHLOROXYLON Roxb.; F. I. ii. 536; F. B. I.

iii. 560; E. D. D. 560.

Orissa.

A medium tree, sometimes spinescent; leaves elliptic or obovate oblong, narrowed upwards or acute, base obtuse or cuneate, chartaceous. *Vernac.* Anduli.

1172. DIOSPYROS MONTANA Roxb.; F. I. ii. 538; F. B. I. iii. 555;

E. D. D. 628.

Behar; Chota Nagpur ; Orissa.

A medium tree, usually spinescent; leaves ovate or oblong. *Hind.* TéncM, dasaunda, lohari; *Beng.* Bangáb ; *Santal.* Sada terel.

1172/2. Var. CORDIFOLIA. *D. cordifolia* F. I. ii. 538.

In most of the provinces.

A medium tree, rarely spinescent; leaves herbaceous. Probably quite deserving to be treated as a distinct species.

1173.- DIOSPYROS KAKI Linn. f.; F. I. ii. 537; F. B. I. iii. 555 ;

E. D. D. 600.

Planted only in our area.

A small tree, cultivated for its edible fruit; leaves ovate, obtuse, or narrowed at both ends, chartaceous.

1174. DIOSPYROS OVALIFOLIA Wight; F. B. I. iii. 557; E. D.

D. 639.

Orissa.

A small tree; leaves elliptic or oblong, cuneate or sub-obtuse at both ends, coriaceous.

1170. DIOSPYROS SYLVAE Uoxb.; P. I. ii. 537; B. 1). D. 635.

Orissa; Chota Nagpur.

A medium tree; leaves elliptic or oblong* narrow** at both ends, herbaceous or chartaceous.

117G. DIOSPYROS STRICTA Roxb.; P. I. ii. 539; F. B. 117. E. D. D. G. 53.

Tippicra.

A tall, slender, conical tree; leaves elliptic-acuminate, coriaceous.

1177. DIOSPYROS TANTOSA Roxb.; F. I. ii. 689; P. B. 117. E. I). D. 656.

Behar; Oho Nagpar; Y. Bengal

A small gnarled tree; leaves usually wide-ovate, rarely ovate-acute, alternate and opposite, thickly coriaceous.

Hind. Tmna niitha tend.; Uriya K. ndhu; Kof. Tiril.

1178. DIOSPYROS DISCOLOR Willd.; F. II. I. ii. 569; E. D. D. 567.

Itthraled In O. Bengal

A tree; leaves oblong-acute, coriaceous.

1179. DIOSPYROS JAWUNUK Uoxb.; P. I. 11586; P. B. 117. E. I). M 8.

Tippicra.

A large tree; leaves large, broadly oblong, coriaceous. Ternac. Irigab, gulul.

Order LXXX. STYRACEJE.

Tree or shrub. Leaves alternate; stipules 0. Flowers hermaphrodite, in axillary or terminal, simple or panicle-1 racemes, sometimes solitary; bracts small. Sepals connate in a superior or inferior campanulate calyx; limb 5-4-toothed or 5-4-toothed. Petals 4, free or connate in a tube, adnate to the petals, 8 or 10 or numerous; anthers globose or linear; deltidial cone connate in a 2-5-celled, inferior or superior ovary, occasionally, by early separation of the stovoid part from the axis,

1-celled; ovules 1 or few on inner angle of each cell, pendulous or erect; style filiform; stigma small or capitate, Fruit indurated, drupaceous. 1-seeded, or occasionally 2-8-seeded, Serth with thin test*; albumen fleshy or sometimes hairy; embryo straight or curved.

Sumeni m*nr. in several rows Symplocos.
 Sumens ten, in a single row Styra-ax,

529. Symplocot Linn.

Trees or Shrubs; *Uavum* alternate, toothed or entire, often rather pale green. *Flomtn* hermaphrodite, white, in axillary, simple or compound racemes or spikes, sometimes reduced to a single flower; bract* usually solitary at base of each pedicel, caducous; bracteoles 8-1, small, at base of flower. *Sepals* connate in 1 calyx, with 5 small, imbricate lobes; tube adnate to ovary. *Petals* 5, imbricate, free or slightly connate, rarely connate in a distinct tube. *Stamens* many. Herma-rodite, adnate to corolla-tube, usually throughout its length, sometimes connate in a tube beyond the corolla; anthers shortly oblong. *Carpels* connate in an inferior, 3-celled, rarely 2- or 4-celled ovary; style filiform; stigma small, capitate, with 3-lobed; ovules 2, pendulous from inner angle of each cell. *Fruit* an ellipsoid drupe; endocarp usually woody, 1-3-seeded. *Stem* oblong, straight, or occasionally curved; embryo axial.

Flowers in racemes; stamens sometimes 100 or more *raemosa*.
 Flowers in small cymes, subterminal on the branches; stamens about 40
racemosa var. *composita*.

1180. SYMPOCOS RACEMOSA Roxb.; V. I. ii. B&P; P. B. 1. iii. "V76;
 E. I. 8. 8002*

• lichur; Chota Nagpur.

A shrub or small tree. *Terminac. L.*

1180/2. VAR. COMPOSITA F. B. I. iii. 577.

• N. Bengal. Doan.

A shrub.

530. Styrax Linn.

Trees or Shrubs; leaves elliptic, lanceolate. *Flowers* in lax, little-divided axillary and terminal racemes, occasionally solitary.

[Styrax.

axillary; bracts inconspicuous. *Sepals* connate in a truncate, or 5-toothed calyx, free or slightly adnate to ovary. *Petals* 5, connate in a short tubular corolla; lobes oblong, imbricate. *Stamens* 10, 1-seriate, adnate to corolla-tube; filaments short; anthers large, linear. *Ovules* connate in a nearly free ovary, at first 3-celled, often 1-celled; style subulate; stigma capitate; ovules few. *Fruit* a globose or ellipsoid, tough capsule, seated on a shaped calyx, breaking up irregularly. *Seeds* by abortion rarely 2, erect; testa papery or hard; albumen fleshy, embryo straight, with broad cotyledons.

1181. STYRAX SERRULATDM Roxb.; F. I. ii. 415 var. A

P. B. I. iii. 589 ; E. D. S. 2981.

N. Bengal, Duars.

A. small tree. Beng. Kum-jameva.

Order LXXXI. OLEACEffi.

Trees or shrubs, unarmed, erect or climbing. *Leaves* very rarely alternate, simple, 3-foliolate or pinnate, toothed; stipules 0. *Flowers* hermaphrodite, often sometimes polygamous or dioecious, regular, usually in cymose or panicles, terminal or axillary, rarely racemose. *Sepals* connate in a small truncate or 4-lobed calyx, rarely 0. *Petals* rarely 0 or 4-6, connate in a gamopetalous corolla, with long or short corolla-lobes or free petals imbricate or valvate. *Stamens* inserted on corolla-tube, or hypogynous if petals free or segments usually short; anthers oblong, dehiscing laterally extrorsely. *Carpels* connate in a free, 2-celled ovary; ovules rarely 3-4 in each cell, attached to inner angle near apex. *Fruit* a loculicidal capsule or a dry or succulent berry. *Seeds* solitary or 2 in each cell, erect or pendulous; bony; albumen fleshy, horny or 0; embryo straight inferior or superior.

*Corolla-lobes imbricate in bud, usually more than 4 in number, not albuminous:— [p. 657]

Fruit a 2-lobed, or, by abortion, 1-lobed drupe; or suberect shrubs, with either simple or compound "erect; radicle inferior [p. 657].....

fFruit a capsule; erect trees :—[p. 656]

Leaves simple ; capsule compressed ; seeds erect; radicle inferior
 Nyctanthes,
 Leaves compound; capsule obovoid; seeds pendulous; radicle
 superior.....Schrebera.

* Corolla-lobes valvate in bud, never more than 4 in number; seeds usually albuminous ; (in *Olea* the corolla may be absent; in our species of *Linociera* the albumen is absent); leaves simple :—[p. 650]

Erect shrubs or trees ; leaves with feathered veins; radicle superior :—

Flowers in axillary panicles:—

Petals rather long, nearly free, or more or less distinctly united in pairs.....Linociera.

Petals shortly united in a tube or 0.....Olea.

Flowers in terminal panicles.....Ligustrum.

Scandent shrubs ; leaves with 3-nerved veins; radicle inferior
 Myxopyrum.

. 531. *Jasminum* Linn.

Erect or scandent shrubs; *leaves* opposite or alternate, simple, 3-foliolate or odd-pinnate ; petiole usually articulate. *Flowers* in 2- or 3-chotomous or simple cymes, rarely flowers solitary ; bracts linear and small, or ovate sometimes petaloid. *Sepals* connate in a usually 4-9-fid calyx; tube funnel-shaped, rarely subcylindric ; limb with linear, short or long teeth, rarely truncate. *Petals* connate in a salver-shaped corolla, white or pink or yellow; tube narrow; lobes 4-10, spreading, in bud imbricate. *Stamens* 2, included in the corolla-tube; filaments very short; anthers oblong; connective usually shortly produced and triangular. *Carpels* 2, connate in a 2-celled ovary; ovules 2, siibbasal in each cell; style cylindric ; stigmas 2, linear, short or long, free or subconnate. *Fruit* a didyinous berry, or from suppression of one
 ^arpeF globose, ellipsoid, or elongate. *Seeds* in each carpel 1, rarely 2, erect; albumen 0; cotyledons plano-convex; radicle inferior. *»

*Erect shrubs or small trees ; leaves simple, distinctly petioled ; petioles half an inch long or longer; cymes many-flowered, lax; ripe carpels usually single, ellipsoid ; branchlets hairy ; calyx pubescent:—[p. 658]

Leaves subcordate or ovate, acute, at length glabrous; calyx-teeth short, linear-subclavate.....*arborcscens*.

Leaves cuneate, elliptic-oblong, often obtuse, persistently softly hairy on both sides ; calyx-teeth minute, narrowly trianguiw* r> ,

Roxburghitmun.

*Climbing, rarely suberect shrubs ; leaves shortly petioled; pet> third of an inch long or shorter; ripe carpels usually two:—[P-157]

Leaves all simple:—

Branchlets pubescent, hairy or villous ; calyx pubescent:—

Cymes many-flowered, dense:—

Bracts prominent, white, ovate-lanceolate; calyx-te< linear; leaves nearly glabrous, elliptic-acute; 1'ipfl ellipsoid; sometimes not climbing.....m

Bracts not prominent, the two leaves close under the! cence green; always climbing:—

Bracts linear; calyx-teeth short, linear; leaves glabrous or only hairy on nerves beneath, ovate-lanceolate ; ripe carpels emP^{soid}.....scandens.

Bracts if present ovate-lanceolate, often absent; cM long, subulate; leaves hairy, ovate-acute; np^e globose.....<M

Cymes few-flowered in wild, often many-flowered in <* plants, always lax; bracts small, calyx-teeth long, I leaves nearly glabrous; ripe carpels globose; always clhj

Leaves ovate ; corolla-lobes oblong.....Listeri.

Leaves narrowly elliptic ; corolla-lobes lanceolate.....ed, lax;

Branchlets glabrous; calyx glabrous; cymes few-fiowe< calyx-teeth long, linear; leaves quite glabrous, oblong or elliptic, acuminate, 3-nerved; always climbing.....aurifolium.

Leaves, at least some, with a pair of minute lateral l>ail>. lets pubescent; calyx pubescent; teeth very minute, oblong M simple, or terminal leaflets if compound, pubescent, ovateOf shortly acute; cymes many-flowered, lax; always climbinguriculatum.

1182. JASMINUM ARBORESCENS Roxb.; F. I. i. 95 ; F. V>. I iii. 594; E. D. J. 13.

Tirhut; Behar ; Chota Nagpur.

A large shrub or scrubby tree. Hind. SaptatoS mallika, muta-bela; Beng. Bura-kunda; Sant^M hund baha.

118B. JASMINUM ROXBURGHIANUM Wall.; F. B. I. iii- I clongatum F. I, i. 90,

Behar; Chota Nagpur.

A large shrub.

1184. JASMINUM COARCTATUM Roxb.; F. I. i. 92; F. B. W ohitta'gong.

A shrub, either climbing or erect.

1185. JASMINUM SCANDBNS Vahl; F. I. i. 89; F. B. I. iii. 595.
N. Bengal; E. Bengal; Chittagong.
A climber.
1186. JASMINUM PUBESCENS Willd.; F. I. i. 91; F. B. I. iii. 592;
E. D. J. 32.
W. Bengal; Behar; Chota Nagpur.
A climber. Vernac. Kundii, kundti-phul.
1187. JASMINUM SAMBAC Ait.; F. B. I. iii. 591; E. D. J. 35.
J. Zambac F. I. i. 88.
In gardens and in village shrubberies in most of the
provinces.
A climber; some of the cultivated forms are double-
flowered. The chief forms are the small single-flowered,
which is the only one found wild, but which is also
often planted ; the small double-flowered, and the large
double-flowered. Vernac. Bel, ban-mallika, mogra.
1188. JASMINUM LISTERI King.
Chittagong.
A climber.
1189. JASMINUM LAURIFOLIUM Roxb.; F. I. i. 92; F. B. I. iii. 597.
Chittagong.
A glabrous climber.
1190. JASMINUM AURICULATUM Vahl; F. I. i. 98; F. B. I. iii. 600.
In gardens.
A climber. Beng. Jut'hi, jui.

532. Nyctanthes Linn.

A small tree ; leaves opposite, ovate. Flowers in small sessile, Jbracteoate heads, disposed in terminal trichotomous cymes. Sejials connate in a subtruncate, ovoid-cylindric calyx, ultimately ^pathaceous or deciduous. Petals connate in a salver-shaped coroll«; tube cylindric, yellow; lobes 4-8, spreading, white, in bud imbricate. Stamens 2, subsessile near the apex of the corolla-tube. Oarpels 2, connate in a 2-celled ovary ; ovules in each cell solitary, basal; style cylindric ; stigma shortly 2-fid. Fruit an orbicular capsule, compressed parallel to the septum, separating when ripe into 2 subdiscoid carpels. Seed in each carpel orbicular, flattened, erect; testa thin; albumen 0; cotyledv^a i!«fc; radicle inferior.

[*Nyctanthes*.

1191. NYCTANTHES ARBOR-TRISTIS Linn.; F. I. 86* F. B. I.

Ui. 603; E. D. N. 179.

Behar; Chota Nagpur: sometimes cultivate[^]

A small tree. H « . Har, siharu, harsinghar, se-talika; seoli, nibari; Bcng. Singhar, harsinghar, Santal. Saparom; Kol. Saparung, kokra.

533. Schrebera Roxb.

A tree; leaves opposite, odd-pinnate. Flowers [^] terminal, 2-3-chotomous, compound cymes; bracts small, h^eP ^{als} connate in a tubular-campanulate, irregularly 4-7-lobed ^{ca} lobes 4-7, connate in a salver-shaped corolla; tube cylindrical, spreading, in bud imbricate. Stamens [%] adnate near ^r apex of corolla-tube; filaments short. Carpels 2, connate in ^{*} 2-celled ovary; ovules 3-A, pendulous from apex of each cell; ^s cylindrical; stigma shortly 2-lobed. Fruit an obovoid, 2-cellidally 2-valved, woody capsule. Seeds pendulous; ^{tes} albumen 0; cotyledons plano-convex or contorted; ^{vadic} radicle superior.

1192. SCHREBERA SWIETENIOIDES Roxb. J F. I. i-109; F. B. I. iii. 604; E. D. S. 959.

Chota Nagpur; W. Bengal; Orissa.

A tree, 40-50 feet high. Hind, Moka, goki, gantha, ban-palas; Bcng. Ohanta parul; ^{iy}a Jantia; Kol. Jarjo, sandapsing; Oraon Ghato.

534. Linociera Swartz.

Shrubs or trees; leaves opposite, entire. Flowers ⁱ in axillary, rarely terminal panicles or cymes, often in small ^{ter} terminal fascicles; bracts small. Sepals connate in a small ^{*} 4-fid calyx. Petals 4, long or short, nearly free, or connate in pairs, ⁱ duplicate, valvate in bud. Stamens 2; filaments short; anthers ^u elliptic. Carpels 2, connate in a 2-celled ovary; style short, ^{obsc} urely [^] elliptic. Fruit an ^{ell} ellipsoid, rarely globose drupe; endocarp bony or crustaceous. ^{See} d us ually (species) Q, solitary, pendulous; testa thin; albumen (in our sp radicle superior.

All parts glabrous; leaves papery, reticulations promm^{el} ^{ary} glabrous. ^{intermedia} ^{var.} ^{Rof} ^{lft} ^{tions} ^{burg} ^{hi}. ^{Tnnovatioi} ^K ["] ^{ai} ["] ["] panicles pubescent; leaves leathery, ^{lne} ^{ticu} ^{lft} ^{tions} obscure; ovary densely pilose. ^{terniflora} ^{var.} « ^{can} ^{lft} ^{tions} ^{ata}.

1193. LINOCIERA INTERMEDIA Wight var. ROXBURGHII Clarke;
F. B. I. iii. 609; E. D. L. 377. *Olea paniculata* F. I. i. 105.

Chota Nagpur; Orissa.

A small tree, 25 feet high.

1194. LINOCIERA TERNIFOLIA Wall. var. ACUMINATA Clarke
F. B. I. iii. 610.

Chittagong.

A tree.

535. *Olea* Linn.

Trees or shrubs; *leaves* opposite, entire or toothed. *Flowers* small, hermaphrodite, dioecious or polygamous, in axillary or terminal panicles; bracts minute. *Sepals* connate in a small, 4-toothed or 4-lobed calyx. *Petals* 4, connate in a very short tube, induplicate-valvate; or 0. *Stamens* 2, adnate to corolla-tube or subhypogynous; filaments short; anthers oblong. *Carpels* connate in a 2-celled ovary; style short; stigma ovate or shortly 2-lobed; ovules in each cell 2, subpendulous or laterally attached to the septum. *Fruit* an ellipsoid or subglobose drupe; endocarp bony or crustaceous, usually 1-seeded. *Seed* pendulous; albumen fleshy; radicle superior.

1195. OLEA DIOICA Roxb.; F. I. i. 106; F. B. I. iii. 612; E. D. O.153.

N. Bengal, Duars; Chittagong.

A tree, 30-60 feet high. *Beng.* Atta-jam.

536. *Ligustrum* Linn.

Shrubs or trees; branchlets often lenticellate; *leaves* opposite, entire, glabrous when mature. *Flowers* white, in terminal panicles, with sometimes foliaceous bracts in the lower part. *Sejm̄ls* connate in a small, truncate, or shortly 4-toothed calyx. *Petals* 4, connate in a funnel-shaped corolla; tube long or short; lobes induplicate-valvate. *Stamens* 2, adnate to corolla-tube; filaments short; anthers oblong or rounded. *Carpels* 2, connate in a 2-celled ovary; ovules in each cell 2, laterally affixed near the t°P; gstyle rather long; stigma subclavate, oblong, hardly 2-fid. *Fruit* a 1-3-seeded drupe; endocarp chartaceous or thin. *Seeds* pendulous; testa thin; albumen fleshy; radicle superior.

1196. LIGUSTRUM ROBUSTUM Blume; F. B. I. iii. 614. *Phillyrea robusta* F. I. i. 101.

E. Bengal; Chittagong.

A tree, 60 feet high. *Vernac.* Bhui-mura.

537. Myxopyrum Bl.

, Large scandent shrubs; branches 4 - angled ; leaves $< \gt]^{\wedge \wedge}$ large, coriaceous, 3-nerved, entire or toothed. *Flowers* small, yellowish, in many-flowered, axillary and terminal trichopj Panicles; bracts minute or 0. *Sepals* connate in an acutely 4-lobed calyx. *Petals* 4, connate in a corolla, with tubefl longer than calyx; lobes concave, oblong or spatulate, induplicate-valvate in bud. *Stamens* % adnate to corolla-tube ; filaments short; anthers ovate. *Carpels* 2, connate in a 2-celled ovary; ovules 1-2 in each cell, attached near base of inner angle; style very short; stigma 2-lobed. *Fruit* a subglobose i-»°ealed, or obovoid 2-seeded berry, with crustaceous pericarp. *Seed* ascend-ing; testa thin; albumen horny; radicle inferior.

1197. MYXOPYRUM SMILACIFOLIUM Bl.; F. B. I. iii. 618.

N. Bengal, Duars ; Chittagong.

A scandent shrub.

Order LXXXII, SALYADORACEJE.

Trees or shrubs, unarmed or spiny. *Leaves* opposite, entire ; stipules rudimentary, setiform. *Flowers* small, dioecious Q or poly-gamo-dimorphic, clustered or paniced. *Sepals* connate id a free, campanulate or ovoid calyx; limb 3-5-toothed or -lobed. L *Petals* 4, free or connate in a shortly campanulate tube; imbricate in bud. *Stamens* 4, on the corolla-tube or, when petals free ^Hogynous, alternate with the petals; filaments free or c o n n ^ ^ ^ tube; anthers ovate, dorsifixed; connective apiculate I r not; dehiscence longitudinal, lateral. *Carpels* connate in a fiw, e, 1-2-celled, or imperfectly 4-celled ovary; ovules 1-2 in each cell, basal, erect, anatropous ; style short; stigma 2-fid or «subentire. *Frmt* a berry or drupe, usually 1-seeded. *Seed* erect, globose, albumen 0; testa thin or cartilaginous; cotyledons thick, cordate at the base.

Direct, unarmed trees or shrubs • «*««oi i i
 « corolla gamopetalous; **Salvadora.**
 corolla-tube; ovary 1-celled, 1-ovuled
 ovary 2- or variously 4 1-celled; cells 3-1-ovuled **Azima.**

538. Salyadora Linn.

Shrubs or trees; *leaves* opposite, entire. *Flowers* small, hermaphrodite, or functionally 1-sexual, in paniced racemes or spikes; bracts minute. *Sepals* 4, connate in a campanulate calyx; lobes imbricate. *Petals* connate in a campanulate corolla; tube with usually 4 small teeth between the bases of the filaments; lobes 4, imbricate. *Stamens* 4, adnate to corolla and alternate with its lobes. *Carpels* connate in a 1-celled ovary; ovule solitary, erect, basal; style 0; stigma truncate. *Fruit* a globose drupe, supported by the slightly accrescent calyx and marcescent corolla; endocarp crustaceous. *Seed* erect, globose; albumen 0.

1198. SALVADORA PERSICA Linn.; F. I. i. 389; F. B. I. iii. 619; E. D. S. 705.

Western. Behar; sometimes planted elsewhere.
A small tree. *Verttac.* Jhal.

539. Azima Lamk.

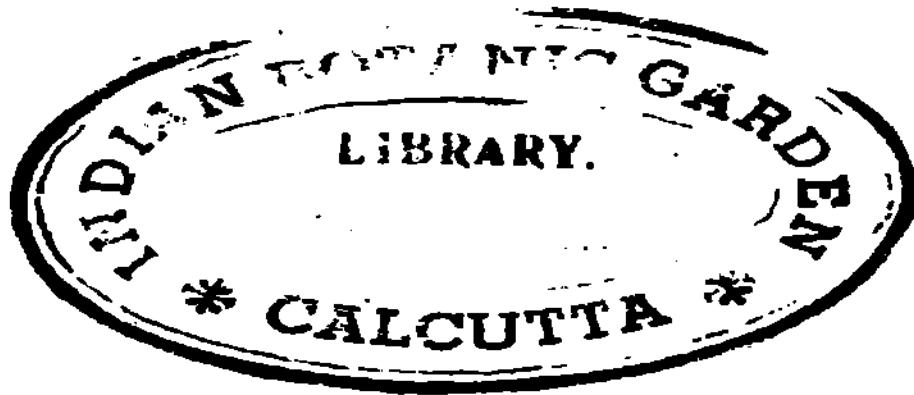
Rambling shrubs with axillary spines; *leaves* opposite, entire. *Flowers* small, dioecious, axillary, sessile, or clustered or umbellate on sparingly branched panicles; bracts 0 or foliaceous; bracteoles small, linear. *Sepals* connate in a campanulate, 4-fid, or irregularly 2-4-lobed calyx. *Petals* 4, oblong, imbricate. *Stamens* 4, alternate with petals, hypogynous; filaments linear; anthers acute. *Carpels* 2, connate in a 2-celled ovary; ovules 2 or 1 in each cell, erect, basal; stigma sessile, large, 2-fid. *Fruit* a globose, 2- or 1-seeded berry; endocarp membranous. *Seed* globose; albumen 0.

1199. AZIMA TETRACANTHA La'mk; F. B. I. iii. 620; E. D. A. 1165.

Orissa; Sundribuns.

A glabrous, rigid, rambling shrub. *Hind.* Kantagurkainai; *Beng.* Trikanta-gati.







SKETCH-MAP OF BENGAL

Forest Tracts

Scale of English Miles

82 E. of Greenwich

