REFERENCE
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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

" VOL. I.

RANUNCULACEJE—SALVADORACEJE

Calcutta

1903

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TO

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

*Officier eVAcademic*

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 the 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 preparation, and that on these it could only receive tyided attention—must have been more numerous had not GEORGE KING, with a kindness which nothing can repay, ad 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. LACE 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. test, Newman & Co., of London, for the care they have exercised, at so great a distance, in printing its pages.

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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 period in the history of Indian Botany. In his preface to the and last volume of the *Flora*, Sir Joseph describes it as a 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 monographs of large Indian genera; and to enable the historian to discuss the problems of the distribution of mom the point of view of what is perhaps the richest and only the most varied botanical area on the surface of the.

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

jr formidable difficulty, however, confronts those who ide what the limits of the specific areas to be dealt with, jocal Floras shall be. Putting aside for the moment the Indan and the Indo-Chinese possessions of Britain, and the huge belt of hill-country which extends along the ap from the Hindu Kush to the Mishzni 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; the 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 the subject, that, though plausible in theory, such a system of delineation is neither wholly practicable nor altogether expedient. In so far as India Deserta and India Aquosa are concerned, the areas 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 Bn&apo;tra, and though we may for the moment ignore, because the territory affected is Indo-Chinese, the fact that this flora rec£ in the valley of the Irrawaday, we cannot forget that the same 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 ascarenes 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 greafeninsular
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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 over-ridden by a consideration for those whom a treatise like a local Flora 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 Væra, 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 Doserta. 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 river 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, eravelly <w>imported</w>, the base of the Himalaya, cov^ _Xc_ at t a t a? ^kan_ 7 T' *T* 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. river-beds only a few tough flexible bushes occur; along the shingly river-courses the jungle is open and the species are those characteristic of a drier climate than obtained in the rally succeeded by a species with long the ground as a rule is in waste tracts usually covered with open character in the western parts, taller and more palm-like in the central districts, and mixed with reedy grass or some consisting only of tall grass as we pass to the east. Much of the tract however, especially in the west, is under then, bare or diversified with bamboos, palms, mangoes, or, less often, groves of other trees; in and the villages themselves the mangoes are often number of tree-weeds and semi-spontaneous more bushes and trees, that form characteristic village shrubberies. In the western parts of this area, where the population is these village shrubberies are sparingly the thickets thus formed become as a rule and denser; in places where a population has appeared, the species characteristic of the thickets form dense and sometimes, as on the site of a, remain there.

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, containing only a few trees. As we pass further east, however, the widen considerably in proportion to their streams, and to contain little or no vegetation. The strong current sweeps everything away; either shingly or sandy banks, and the other seasons too dry to admit of much growth. But old marshes, lakes, and such streams as are stagnant except after heavy rains, are almost as vegetation as is the land, while even small rivers with 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 Sundri-buns 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 coastline, 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 Sundri-buns or the fresh-water marshes of the Jhils, is characterized by the presence of many low hills, islets of laterite 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 Hiraal. This forest extends up the slopes that lead to the ede 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 petiks, 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 Sundriabuns. 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 Sundriabuns.

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 ghat 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 advantageous 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 and humidity, account for the presence in Behar of many species from Bandelkand, and some from the Panjab, that are absent in Tirhut. Another and, though an accidental, not less factor in influencing the vegetation of Tirhut is the %d% population. So close, in consequence, is the tilth through which the whole districts field is conterminous with the cultivated field.
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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 so 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 as 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.
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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 owe 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 the 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 found that will retain fresh-water, and where only the larger streams.
BENGAL PLANTS.

are much affected by the tides. This dense forest forms the compact and natural Sundribun province, filled with species to be nowhere else in our area save along the southern coast of Chittagong and, to a minor degree, in the delta of the Mahanadi. Of knowledge of the Sundribun flora we owe to many collectors, Roxburgh, Wallich, Hooker, Thomson, Anderson, Kurz, Gamble, Clarke, have all penetrated the tract. It is, however, to Heinrich 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 Tippera, 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 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 Tirlmt. Even here, however, amid much agreement there is...
I.—INTRODUCTION.

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 tuners from Tirhut, since along the northern border of that province this rest 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 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 hagirati 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, if 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, Decandria*—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 *Polygamy*, which forms the twenty-third class of the artificial system of Linnaeus, 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]

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: —

I. MONANDRIA.

II. DIANDRIA.

III. TRIANDRIA.

IV. TETRANDRIA.

V. PENTANDRIA.

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

VI. HEXANDRIA.

VII. HEPTANDRIA.

VIII. OCTANDRIA.

IX. ENNEANDRIA.

X. DECANDRIA.

XI. DODECANDRIA.

Filaments attached to calyx

XII. ICOSANDRIA.

Filaments not attached to calyx

XIII. POLYANDRIA.

Stamens not markedly unequal length: —

XIV. DIDYNAMIA.

XV. TETRADYNAMIA.

Stamens united: —

Union of stamens occurring in the filaments: —

XVI. MONADELPHIA.

Stamens in one phalanx or bundle

XVII. DIADELPHIA.

Stamens in two phalanges

XVIII. POLYADELPHIA.

Stamens in three or more phalanges

Union of stamens confined to anthers

XIX. SYNGENESIA.

Male organs attached to and standing upon the female

XX. GYNANDRIA.
Stamens 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. MONOECIA.

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

Male and female flowers mixed with hermaphrodite flowers, the
unisexual flowers sometimes on the same, sometimes on different
plants ....................................................* XXIII. POLYGAMIA.

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

* The Polygamous are
are polygamo-monoeilo

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**.

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 .......................... 93°. **Globba**.

Ovary 3-celled; placentas axial:—

Lateral staminodes broad:—

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

Filament short:—

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 a cone-like spike .......................... 934. **Curcuma**.

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

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 rising direct from rhizome, rarely at apex of a leafy stem.

Anther-cells contiguous, parallel:—
Filament short, connective produced as a narrow appendage as long as the anther; stigma subglobose; spikes usually produced direct from the 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 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.

Anther 1-celled, laterally adnate to a petaloid filament; calyx 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 panicled scattered flowers; panicle with convolute deciduous sheathing bracts at the forks, and deciduous bracteoles.

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

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

7G3. Boerhaavia.

Leaves 0; stems fleshy; styles 2 or more:—
Flowers in the axils of scales of a stoutish cone; seeds albuminous, embryo curved 783. Arthrocnemum.

blowers sunk in cavities of the joints of a slender cone; seeds without albumen, embryo conduplicate 784. Salicornia.

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

t 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 deciduous 1032. Kyllinga.

Rachilla of spikelet persistent:—
Fruit laterally compressed 1033. Pycreus.
Fruit dorsally compressed 1034. 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 scales 1042. 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 1043. Eriophorum.
segments.........................

Hypogynous scales 1-7, undivided, or 0...1045. Scirpus.
f Flower interposed between a glume and a palea; leaves 2-stic
sheaths open in front and ligulate at apex behind; fruit a grain *\
seed adherent to pericarp; embryo outside albumen at base; s y
2, distinct, very rarely connate below :—[p. 25]
Spikelets articulate on their pedicels or deciduous with them ±
Spikelets all similar; styles connate below ...1065. Impagr
Spikelets dissimilar; styles free:—
Glume III of sessile spikelet male . . . .1076. Pogonatherus.
Glume III of sessile spikelet neuter or 0...1080. Andropogon.
Spikelets continuous with their pedicels and persistent on the
styles free:—
Spikelets 1-flowered.........................1088. Polypogon.
Spikelets 2- or more-flowered :—
Spikelets minute, in globose clusters on an elongated simp
rachis.........................1097. Elytrophorus.
Spikelets conspicuous:—
Spikelets penicillate with long silky hairs, in large panic
1099. Phragmites.
Spikelets not penicillate with silky hairs, in loose panicle
or spikes.........................1101. Eragrostis.

Class II. DIANDRIA.

Carpels and styles 4, carpels free ; smajl submerged aquatic plants o
brackish ponds and marshes, with narrow grassy leaves... 1021. Ruppia.
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]
Perianth 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 capit-
illary branches of a large panicle [p. 27] 1050. Thyaanolsna.
**Spikelets secund on a slender flattened or filiform rachis:**

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

Spikelets all similar:

- Racemes of spikelets in compound spiciform panicles; styles connate at base. 1065. *Imperata.*
- Racemes of spikelets 2-nate, digitate, or approximate on a short main axis; styles free. 1068. *Pollinia.*

Spikelets dissimilar:

- Lower floret of sessile spikelet male:
  - Spikelets all awned; styles free:—
    - Spikelets 2-awned. 107G. *Pogonatherum.*
    - Spikelets 1-awned:—
      - Leaves lanceolate; spikelets 2-flowered. 1077. *Apocopsis.*
      - Leaves cordate at base; spikelets 1-flowered. 1078. *Arthraxon.*
    - Spikelets 2-nate, only the upper one awned; styles connate below. 1079. *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 nerves. 1096. *Centotheca.*
- Leaf-blade without any transverse venation:—
  - Spikelets 1-flowered:—
    - Glumes I and II membranous, not awned. 1090. *Sporobolus.*
  - Spikelets 2- or more-flowered:—
    - Spikelets minute, in globose clusters on a long simple rachis. 1097. *Elytrophorus.*
  - Spikelets conspicuous:—
    - Spikelets panicillate with long silky hairs, panicled. 1099. *Phragmites.*

Spikelets not panicillate, loosely panicled or spicate. 1101. *Eragrostis.*

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 gamas:—[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. *Cladium*

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

Flowering glumes distichous; perianth 0:

Ilachilla of spikelet deciduous

1032. *Kyllinga*

Rachilla of spikelet persistent:—

Fruit distinctly compressed:

Fruit laterally compressed

1033. *Pycreus*

Fruit dorsally compressed

1034. *Juncellus*

Fruit trigonous

1035. *Cyperus*

Flowering glumes spirally arranged:—

Base of style constricted or articulate above the fruit:

Style-base deciduous, leaving a tumour on the fruit:

Glumes separable from the rachilla

1039. *Fimbrystylis*

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*

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

Perianth segments in two dissimilar whorls; staminodes 4; leaves

1046. *Aneilema*

Perianth segments all similar, corolline; staminode 1; leaves

976. *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:

Petal free:

Leaves alternate:

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


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

Corolla-lobes imbricate:

Climbing shrubs with berry-like fruits; leaves compound or simple

531. Jasminum.

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 an 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. Utriculai.*18.

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.*1.

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 exserted:—

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 *07-05 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:—
**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 segments... 

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. **Scirpus**

[Flowers interposed between a glume and a palea; leaves distichous; sheaths open in front and ligulate at apex behind; fruit a grain] embryo outside the albumen; styles 2 free or, rarely, connate below 1046.

[Wind] Mature spikelets separating entirely from their pedicels, or in clusters with them; spikelets similar or differing in sex and structure of perfect spikelets with 2 heteromorphic florets, the upper hermaphrodite the lower male or barren:—[p. 37]

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

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 involucel 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 sanolensana**

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, prominent .....1055. **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.**

1 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.**
Kacemes of spikelets 2-nate, digitate, or approximate on a short main-axis .......1068. **Pollinia.**
Spikelets dissimilar or (Ophiurus) spikelets solitary:

Spikelets sunk in pits of an articulate fragile rachis:

Sessile spikelets solitary in each internode of the spike:

Spikelets not accompanied by an upper spike or even the pedicel of one...

Sessile spikelets accompanied by dissimilar pedicelled spikelets:

- Glume I globose, inflated, pitted... 1070. Manisuri*
- Glume I smooth:
  - Glume I ovate-oblong ............ 1071. Rottboellia-
  - Glume I caudate.................. 1072. 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

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. Apocopsis-
  - Spikelets 1-flowered; leaves cordate at junction with sheath
    ............... 1078. 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 or reduced to an awn:

- Spikelets in alternating pairs or the lowest solitary —
  - Sessile spikelets more than 2, usually many,
    inflorescence usually elongate...
  - Sessile spikelets 2 only; inflorescence very short

1081. Andropotent

Spikelets dimorphic, the 4 lower spikelets involucre round the upper:

HRachis articulate above the involucrant spikelets

[Page 373]
Rachis articulate below the involucrant 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 panicked, 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, awned. ...1088. *Polypogon.*

Glumes I and II membranous, not awned:—

Pericarp of grain adnate to seed. ...1089. *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 continued (*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 tesselately 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:**

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. *Eragrostis.*

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

1102. *Myriostachya.*

Flowering glumes 5- or more-nerved; spikelets panicled. 1103. *Bromus.*

[ 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. *Diplachna*

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 digitate 1108. *Chloris.*

Spikelets awned; spikes solitary spicate or racemed

1109. *Tripogon.*
III.—TRIANDRIA.

Spikelets in numerous spikes:—

Spikelets digitate or whorled ........ H H. Eleusine.

Spikelets racemose 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 ... H 1 3. Oropetium.

Plane of spikelets tangential to the rachis ... H 1 4. 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]

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

Ovary inferior:—

Perianth of 2 dissimilar whorls, 3 outer segments calycine; leaves all radical tufted; aquatic plants .................................. 888. B 1 y x a n

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

Ovary- 1-celled; leaves mostly radical tufted, sometimes all reduced to scales .................................. 8 9 L 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 superior:—

Perianth of 2 dissimilar whorls; outer segments calycine:—

Stem a leafless scape with capitate flowers; leaves all radical ........................................ 9 7 4. 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 grassy herbs .................................................. 9 8 L JunCUB#

not sheathing at the base, venation reticulate, never reduced

aths or scales; short and broad, or if narrow with penanth-

Smets 4 or 5 in each whorl:—

perianth none; styles free; flowers in cylindrio spikes; leaves

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

Leaves compound:
Leaflets gland-dotted; leaves 3-foliolate or odd-pinnate
133. Zanthoxylum*

Leaflets not gland-dotted:
Leaves even-pinnate; leaflets opposite:
  Petals 5........................................ 278. Cassia*
  Petal 1........................................ 284. Intsia*
Leaves odd-pinnate; leaflets alternate........148. Ailanthus*

Leaves simple:
Styles 3 or more, free; carpels united:
Ovary 1-celled; leaves always opposite; petals small but usually present..........................66. Stellar*.

Ovary 3-5-celled:
  Leaves opposite or falsely whorled or alternate; petals 0
383. Mangle.

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

Style simple or styles connate:
Leaves alternate:
Leaves entire........................................ 169. Olax*
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. Polycarpos-
  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 3-5; petals often 0............................342. Ammanni**

Class IV. 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.

SMarsh 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:—

Petoles of upper rosulate floating leaves inflated and vesicular, the lower submerged leaves pectinate opposite. 353. Trapa.
Petoles, 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 opposite petals.............. 188. Yitis.

*Except herbs, shrubs, or trees, if climbing raising themselves by volubile stems or by prickles, if with tendrils (lltwhinia sometimes) these simply hooked or subcircinate not spiral:—

Leaves compound:—

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

Leaflets not gland-dotted:—

Ovary 5-celled; seeds winged................................. 166. Cedrela.

Ovary 1-celled; seeds not winged:—

Ovule and seed solitary; unarmed trees with once pinnate odd-pinnate leaves................................. 210. Rhus.

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

Leaves simple:—

Leaves alternate:—[p. 43]

+Perianth single:—[p. 42]... arn.

"Perianth tubular and constricted above the ovary, stamens alternate with perianth-lobes[p.42] 807. Elaeagn s.
"Perianth deeply partite or the segments quite free, tubular below not constricted above the ovary:—[p. 41]."

Ovary inferior:—[p. 41].

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-

Perianth double:—[p. 41]

Petals free or only slightly connate below:—[p. 43]

Petals valvate:—[p. 43]

Petals imbricate:—

§ Style simple or styles united:—[p. 43]

Ovary of 1 solitary free carpel; leaves 2-lobed at the apex:—[p. 43]

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 placentas:—

Fruit long, narrow, cylindric


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.
IV.—TETRANDIA.

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.

Petals 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 stigma

605. Tournefortia.

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

642. Celsia.

Leaves 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:—
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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:
  Small herbs; 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 interpetiolar stipules, or if stipules 0 leaves whorled:
    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 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 indehiscent; seeds usually angular

410. **Hedyotis.**

Calyx-teeth in fruit remote; capsule loculicidal 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]

tfFruit a fleshy or dry drupe, with two or more pyrenes :

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.

ffruit of 2 separable cocci; herbs:—IP-
   Cocci indehiscent:—
      Flowers in cymes; cocci snia
      Flowers solitary, axillary; cocci
      Corky................435. n
      Cocci one only or both ul
timately de-
      hiscing ventrally....436. Sper

**Leaves whorled, stipules 0 [p. 45] — hiapi

I Ovary superior :—[p. 44]
   Corolla regular:—•
      Ovary 1-celled: --
         Ovule solitary........................M'
         Ovules many..........................bU
      Ovary 2-celled; ovules many: —
         Corolla-lobes contorted:—
            Corolla-lobes twisted to right...59b. **»»»-us.
            Corolla-lobes twisted to left...542. Melodin
      Corolla-lobes not twisted:—
         Fruit indehiscent......................595.
      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
   collateral:—
      Fruit not 4-lobed: --
         Fruit a small drupe with 4 pyrenes
         Fruit a leathery capsule....735.
      Fruit 4-lobed, separating into 4
      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*
GLASS Y. PENTANDRIA.

1. Inflorescence spicate on a fleshy spadix subtended by a large spathe; leaves simple:—

Phytic climbers with smooth leaf-stalks and leaves

1010. Rhaphidophora.

Marsh herbs with prickly leaf-stalks and leaves ........ 1012. Lasia.

Inflorescence not within a spathe, or if spathaceous not spicate:—

Inflorescence not within a spathe, or if spathaceous not spicate:—

1. Infl lowers large, showy, in few-flowered racemes; leaves linear-lanceolate, simple; ovary 5-celled, superior, ..... 132. Hydrocera.

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

3. Infl rolla regular, petals more or less connate, leaves floating:—

Aralia 1-celled:—

Leaves small, whorled, spathulate 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 subindiscent

601. Limnanthemum.

Ovary 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 near water, the stems

*ERKCT and the leaves not floating:—

Shrubs with spirally twisted tendrils:—[p. 48]

4. Inflorescence with no corona; style simple; petals connate at tips in a Cal y Ptra; stamens opposite petals, the filaments free throughout;

Leaves simple; leaves simple or compound ....... 88. Allas, powers with corona outside stamens; styles 3; petals free; semen alternates with petals, adnate below to gynophore; leaves

1. *Ple, entire or lobed or partite ................. 357. Passiflora.
Erect herbs, or shrubs, or trees, or if climbing raising themselves by voluble stems or by prickles; if by tendrils (Helmut, Ancistroclaus, Uncaria, Bauhinia sometimes, and Strychnos sometime) then these simply hooked or subcircinate, but not spiral:—[p. 47]

Leaves absent; yellowish parasitic twiners........... 613. Cuscuta*

Leaves present:

Leaves 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. Harpula*

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 not gland-crested ............... 298. Desmanthus*

Leaves unevenly twice or more than twice pinnate :

Leaves opposite............................ 678. Oroxyllum*

Leaves 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:

Carpels 2 :—[p. 49]

Petals 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]
386. Carum.

Furrows of the fruit with solitary vittae

387. Pimpinella.

Furrows of the fruit with 2-3 vittae

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

Fruit oblong or subcylindric, not winged:

| 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.

Pedicels jointed; albumen uniform 397. Panax.

Pedicels continuous; albumen ruminated

395. Heteropanax.

ft Carpels 4-5; pedicels jointed; petals faintly imbricate; petals alternate (Inchodesma alternate only above); or petals opposite the perianth double. 394. Aralia.

Carpeles 5, styles free:—398. Heptapleurum.

Carpel 2, styles free:—396. Brassaiopsis.

Petals: \( S \) alternate (Inchodesma alternate only above); or

\( S \) alternate (Inchodesma alternate only above); or

\( P \) alternate (Sarcolip). with stamens opposite the
BENGAL PLANTS. [Artificial Gisle]

Leaves penninerved; ovary superior:—[P. 49]
Ovules 3 pendulous from tip of a central placenta; stamens opposite edges, rarely opposite centre of irregularly united petals

169. Ola*

Ovule solitary pendulous from apex of column; stamens opposite free petals......170. Op

Styles two or more, free:—[p. 49]
Ovary superior; flowers in small cymes; leaves penninerved; aestivation open ...168. Chailletia.

Ovary inferior; flowers in umbels; leaves palmately-nerved..................384. Hydrocotyle.

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

Stamens alternate with petals :—[p. 52]

Styles 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 sheathing; flowers racemose or panicled :—

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


Sepals and petals alike or nearly so

355. Homalium.
JOvary 2-5-celled :—[p. 50]
Sepals free; ovary 3-5-celled :—
  Styles and carpels 5 . . . . 121. Linum.
  Styles and carpels 8-4
  122. Reinwardtia.
Sepals more or less connate below; ovary
2-celled; styles 2 . . . . . 181. Kurrimia.
J [Leaves minute and scale-like:—[p. 50]
  73. Tamarix.

Style solitary or styles united :—[p. 50]
Corolla irregular :—
Leaves equally 2-lobed; carpel solitary;
petals 5 . . . . . . . . . . . . . . . . . . 279. 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-clasping . . . . . . 943. 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 accrescent :
  Flowers cymose; ovary at base
  confluent with disk
  180. Gymnosporia.
  Flowers spicate, racemose, or paniculate; ovary at base free from disk
  179. Gelastrus.
Ovary 1-celled; petals accrescent
  204. Swintonia.

Ovary inferior:—
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Sepals imbricate, shortly connate be ovary 1-celled and 1-ovuled
205. Drimycap

Sepals valvate, united below considerable tube; ovules more one:
Ovary 1-celled; ovules 2-5

Ovary 4-5-celled; ovules very "m a n J.

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

Stamens opposite the petals:—[p. 50]

Sepals valvate:

Ovary superior or half-superior:
Fruit a dry or fleshy drupe with no terni:—
wing.........................184. Zizyphus
Fruit a dry nut prolonged above an oblong linear leathery wing.............185. Ventilago
Ovary quite inferior, the fruit tipped by persistent calyx:—
Fruit 3-winged; flowers in paniculate fascic:
186. Gouania

Fruit terete, ovate; flowers subumbellate
187. Helianus

Sepals imbricate; ovary superior:—200. Sab...

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

Fruit a capsule:—
Seeds very many.
Seeds few, 1-4.
Corolla-limb subentire, plicate; stigmas to style 2, linear.

Carpels 2 free, only the styles united:—
Fruit of 2 indehiscent fibrous and woody carpels.
Fruit of 2 follicles.

Carpels connate as well as the styles:—
Corolla with a ring of hairs or scales in throat:—
Throat of corolla with many hairs conceal the stamens; fruit a 2-locular drupe.
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. Cynoglossum*
Nutlets with scar of attachment extending to their apices, more or less produced upwards

610. Bothriopismus*
Corolla-throat naked:—
tOvules 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, coiled 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, dehiscing 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...fl!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 less scandent...605. *Tournefortia*

   Style elongated, dilated at the apex, stigma above the ring either 0, or elongated lanceolate simple, or linear and double; stones 4, each 2-seeded; herbs

   606. *Heliotropium*

   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:

   §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 capitâte
621. Aniseia.
Outer 3 sepals not larger than the 2 inner nor decurrent on the peduncle:—
* Stigmas elongated:—
[p. 58]
Stigmas filiform; ovary 2-locular, 4-ovuled, capsule 4-valved or indehiscent; hairs simple or rarely 2-branched [p. 58] 
622. Convolvulus.
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fStigmas elliptic, short or long; ovary 2-locular, 4-ovuled; capsule 8-valved; hairs many-branched [p. 56]

623. Jacquemontia*
- Stigmas globose:—[P. 56]
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 circum-scissile dehiscence; ovary 2-locular; fruiting sepals considerably enlarged; bands 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:—
Corolla more or less campanulate; calyx-lobes never aristate, inflorescence never scorpioid; stamens not exserted [p. 59]

626. Ipomcea.
Genera.—V.—PENTANDRIA.

(Corolla more or less hypocrateriform; calyx-lobes aristate or if obtuse the inflorescence scorioid; stamens exserted:—[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 hypocrateriform

630. Rivea.
Fruit mealy or fleshy; stigmas globose; corolla not, or very rarely, hypocrateriform:—
Sepals large, orbicular, accrescent, 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 of its leaf
[p. 60J........................................787. Polygonum.
***Stipules lateral, free:—[p. 59]

Fruit a small drupe with hard endocarp

FR·

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

Leaves serrate; cotyledons flat

851. Ulmum

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

§Leaves opposite (m ThreoUemia alternate above) or whorled:—[p. 49]

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

Sepals free, imbricate; styles 3 or more:—

S at i a

383. Mollugo

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

Lobes of calyx or perianth valvate:—

Wlves of period with a tuft of \^\m^\their

int a

810. Santalum.

Lohp

many 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

Ovary 1-celled:

Styles free:—

'Stigmates absent

'Stigmates present, scarious 67. **Sparguia**.

Styles combined:—

Sepals not keeled:—

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

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

Sepals keeled; leaves linear or spathulate; 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 178. **Lophopetalum**.

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

Style Bimplo 204. **Ammannia**.

Style two, free:—

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

Stamens alternate with

Stipules present interpetiolar or if 0 (**) —

**Loranthus** umea2.

Stipules present interpertioiar or if 0 (**) —

*?££ - nyt; 77 few, at least more than one in each cell:— [p. 63]
IFFruit dry, dehiscent, or if indehiscent rating into 2 several-seeded cocci:—

Flowers in dense globular heads; funnel-shaped; stigma simple, far-exserted; ovary confluent; fruits forming a globose solid mass; corolla-lobes imbricate in heads not bracteate; trees

403. **Anchocephalus**.

Ovaries free or nearly so; fruits separate, capsular; corolla-lobes valvate in bud:

Flowers intermixed with paleaceous bracteoles; trees:

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

Calyx-limb entire; heads with 2 wide bracts...............405. **Stephegyn**;

Flowers not mixed with bracteoles; climbers with hooked peduncles

406. Uncaria

Flowers axillary, solitary or fascicled, or in axillary or terminal cymes, racemes, panicles, never in dense globose heads; corolla-lobes twisted in bud; fruit 2-celled; seeds angular, but not in panicles; trees or shrubs

407. **Wendlandia**.

Corolla-lobes Valvate in bud:

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

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

Fruit oblong, subglobose, or orbicular:

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**.
II Fruit 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.


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]

Corolla-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 § Pseudixora.

423. Webera § Pseudixora.
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- Style long, glabrous; stigma slender.

[p. 63]

Bracts membranous, the lower sheathed.
424. Pettft-

Bracts coriaceous, not sheathing.
425. I*01*

{{Flowers axillary, solitary or

fCorolla-lobes valvate in bud :—[p. 63]

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 pap-
lose:—

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

Ovary 2-celled . . . .428. Canthiur*-

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 panicled . . . .432. Hamiltonia*

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

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
overlapping............. 564. 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 coma ............. 567. Finlaysonia.
Filaments with interposed teeth or glands;
seeds with a coma :—
Cymes short, sessile; corolla-lobes short,
owate; follicles smooth
568. Streptocaulon.
Cymes loosely panicled; corolla-lobes lan-
ceolate; follicles with many longitudinal
membranous wings ...569. Myriopteron.
fPollen granular; stigma annular or \( \text{annular} \) below the smooth, non-stigmatic entire o\( \text{tip} \) of the style :—[p. 65]

Anthers free from the stigma, a\( \text{scrolled} \) eluded within corolla, the anther-cell, rounded bases:—

Calyx not glandular within :—

Fruit indehiscent, drupaceous; see
without wings or coma :—

Ripe carpels 1-seeded and more\( \text{united} \) below; corolla-lobes overlapping to the left ......... 547.  
Ripe carpels 1-2-seeded, sometimes abortive; lobes overlapping to the right

Fruit dehiscent, of two free, several-seeded follicles; corolla-lobes overlapping to the left:—

Ovules in each carpel 6 or more, only 2 rows; seeds subcylindric, \( \text{cylindrical} \) ciliate at both ends; leaves opposite:—  

Ovules very many in several rows, each carpel; seeds ciliate at both ends; leaves whorled

550. \text{Alstonia}

Calyx glandular within; fruit follicular :—
Follicles few-seeded coriaceous, sometimes hardly dehiscent; seeds embedded in pulp, without wings or coma; corolla-lobes overlapping to the left

551. \text{Tabernsemontana-}
Follicles many-seeded, slender, woody; seeds not embedded in pulp, tipped with a deciduous coma; corolla-lobes overlapping to the right ...552. \text{Holarrhena-}

Anthers conniving in a cone round the top of the style and attached to it by a po\( \text{int} \) on the connective, the anther-cells produced downwards into a subulate empty sp\( \text{ulate} \); carpels rarely (\text{Vallaris, Parsonsia}) connate*
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. 68J. 560. *Chonemorpha.*
BENGAL PLANTS.

HCorolla medium or snian, wide or less:—[p. 67]

Lobes of medium corolla ne straight; ovary completely orially hidden in the disk; seeds beaked. 561. Agama
Lobes of the small corolla twisted to the left in bud; beaked:

Ovary hidden in the shaped disk; tips of corolla-lobes not deflected

Anodendron. 562. Ovary free from the disk; tips of corolla-lobes.

516. carpels permanently united, stigma termina

[p. 65]

Throat of corolla with a ring of scales; corolla contorted and twisted to the left:—

Corolla large with a wide campanulate scales of the throat ciliate; ovary 1-celled with parietal placentas; fruit an ova
echinate, 2-valved capsule

540. Allamanda Corolla medium hypocrateriform; ovary 2-celled with axial placentas; fruit *
globe, smooth berry......542. Melodinus*

Throat of corolla naked:—

Fruit 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. Fagrasa.

\ Corolla-lobes valvate; leaves usually 3-5-nerved; trees, or shrubs climbing with short, hooked tendrils [p. 68] 595. Strychnos.

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 panicled; drupe included in a bladdery calyx; large trees 725. Tectona.

Cymes capitate, with large involucrant bracts; large climbers 733. Sphenodesma.
Class VI. HEXANDRIA.

Leaves 0; parasitic twining herbs..........................802. *Cassy-tha-taken

Leaves present, or if no proper leaves (Asparagus), then their place by slender leaf-like modified branches (cladodes):—

Flowers in simple or branched spikes (spadices) subtended by much modified bracts (spathes):—

Perianth-segments conspicuous, rigid, in two dissimilar sen each:

Leaves pinnatisect, segments with flabellate nerves, polygamous (usually monoecious); medium palms

987. *Waffle*des

Leaves orbicular, flabelliform, plicate, lobes with induplicate si and parallel nerves; flowers all 2-sexual:—

Stigma in fruit basal; lofty palms..........................082. *Cory-

Stigma in fruit terminal; small palms........................083. *LiCU-

Perianth-segments small, herbaceous, 6 similar:—

Erect prickly herbs of wet places..........................1012-kthos-

Scandent unarmed epiphytes...........................1011. *° - by
Flowers variously arranged, but if in spikes these not subtended spathes :••

*Leaves compound, with 3 or more leaflets :—[p. 71J *Gynan-
dropals*

Leaves digitately 5-7-foliolate..........................51.

Leaves pinnate :—

Leaflets 3, gland-dotted, a lateral pair with a shortly petio terminal leaflet..............................140. *Triph*agia-

Leaflets more than 3, not gland-dotted :—

Leaves odd-pinnate :—

Style simple; ovary 5-celled; fruit a 5-valved capsule with many winged seeds..........................166. *Cedre-

Style 3; ovary 1-celled; fruit a dry drupe with a ft1r1, 1-seeded stone.................................210. *Rh-

Leaves even-pinnate:—

Seeds without an arillus :—

Cocci of fruit at first united, ultimately spontaneously separating..........................192. *Sapind-

Cocci of fruit deeply divided to nearly their base spontaneously separating..........................194.

Seeds arillate:—

*FFruit not deeply lobed, usually more than 1 cell developed [p. 71]..........................195. *Schliechert*
If fruit sulcately lobed, usually only 1 coccus developed
[p. 70].................................196. Nephehum.
"Leaves simple, or if compound only 1-foliolate, or if absent
replaced functionally by cladodes:—[p. 70]
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; 6vules 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 corona-
lobes:—[p. 72]
Cymes panicked; drupe included in the lofty trees...................72.
Cymes capititate, 3-9-flowered, with large bracts; large climbers...........732. Symphorema.
BENGAL PLANTS. [Artificial GU]

Leaves alternate:—[p. 71]

Stamens opposite petals or corolla-lobes:

- Corolla-lobes as many as calyx-segments
  - 523. Achr*
  - 526. Mimusop*

Stamens alternate with petals or corolla-lobes:

- 504. Cor
- 634. Lycopersicum*
- 635. Solanum*

Stamens, even when corolla present, not adnate to petals:—[p. 71]

- Perianth-segments of 6 sepals and 6 petals all free; stamens hypogynous; armed shrubs with leaves fascicled in the & of 3-5-partite spines
  - 32. Berber*

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

- Leaves opposite:
  - Sepals free; styles 3; stamens arising from thalamus
    - 66. Stellar*
  - Sepals connate in a calyx-tube; style simple; stamens arising from calyx:
    - Calyx-lobes imbricate; leaves strongly 3-nerved from base
    - 340. Sone*
    - Calyx-lobes valvate; leaves penninerved
      - 342. Ammannia-

Leaves alternate:

- Perianth 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*
- Sepals connate in a small gamophyllous calyx:
Stamens alternate with petals:

Leaves gland-dotted ........................................ 207.
Leaves not gland-dotted ............................. 355.
Stamens opposite petals ........................................ 207.
Perianth single, of sepals only; leaves stipulate.

[page 72]

Stipules lateral, free; trees ....................... 852. Holoptelea.
Stipules ochraceous; herbs:—
Stigmas capitellate ......................................... 787. Polygonum.
Stigmas fimbriate ........................................ 788. Rumex.

Veination of leaves parallel:—[page 71]

Ovary inferior:—[page 74]

Flowers more or less sunk in the raceme, all the flowers of the
in a fleshy cone-like fruit ........................................

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
Otelia.

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

Ovary 3-celled; outer perianth-segments white, pink, or
yellow, petaloid like the inner:

Leaves large, thick, and fleshy, densely
dense rootstock or a short, simple stem, spiny at tip;
armored along the edge; scape long, terminal, simple
branching towards apex:

Inflorescence simple spicate, or compound;
stamens longer than perianth; flattened at the base; style filiform.
Inflorescence laxly paniculate; stamens
shorter than perianth; filaments thickened at base;
in the middle ........................................

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

Rootstock tuberous; leaves strongly
duplicate; flowers spicate or racemose, very
umbellate; perianth yellow:—[page 74]
Fruit opening at top as a circumscissile capsule; ovary not produced above the stipe supporting the perianth. Fruits indehiscent; often the ovary produced between the crown and the base of the petals.

Rootstock a tunicated bulb; leaves not nerved, flat, smooth, thinly fleshy; flowers in a scape usually umbellate, occasionally so perianth white or pink:—[p. 73]


Flowers arranged in spikelets with imbricating glumes, 1-locular and ovule solitary; leaves with stem-clasping sheaths and a ligule at the junction of leaf-sheath and blade; if present reduced to a 2-nerved palea and 2 lodicules in a grain with seed-coats adherent to the pericarp:—[p. 73]

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

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

Glumes I and II absent; III and IV membranous. Oryza. 1059. Lecria-

Glumes narrow, the outmost awned.

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

Pericarp thin and membranous. Bambusa. 1110.

Pericarp fleshy or crustaceous:—

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

Ovary hirsute at top; pericarp crustaceous.

Ovary glabrous at top; pericarp fleshy.

Spikelets 1-flowered:—

IFSpikelets crowded in globose heads [p. 74]
1122. Cephalostachyura.

If pale 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 panicled whorls; perianth-segments regular 2-seriate, 3 outer herbaceous, 3 inner petaloid; fruit of (1 or more achenes:—

Flowers all 2-sexual
1015. Alisma.
Flowers polygamous
1015. 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
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 segments 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:—
Perianth-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]
Pericarp membranous, deliquescent; seeds ripening outside the pericarp; each cell of ovary 1-ovuled [p. 76]...947. Sanseviena.
BENGAL PLANTS.

Pericarp persistent, firmly coriaceous:—[p. 75]
Each cell of the ovary 1-ovuled

962. **Dračena.**

Each cell of the ovary many-ovuled

9C3. **Cycline.**

**Perianth-tube wide, funnel-shaped, lobes broad, longer than the tube; fruit a loculicidal capsule, delicate leafy herbs; flowers panicled [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-leaved scape:—[p. 77]

Shrubs with perennial epigeteal stems; leaves main branches with many clustered leafy cladodes, fruit a berry. . . . . 960. **Asparagus.**
Herbs with annual stems or scapes rising from perennial rootstocks, corms, or bulbs, rarely (Asphodelus) wholly annual:

If Underground perennial stem large in proportion 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
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 campanulate

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.**

* 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.**

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**Class VII. HEPTANDRIA.**

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

†Sepals.............. [p. 78] ovary syncarpous; fruit composed of 1 or more cocci ........................................................................ 194. **Aphania.**

ILT. arillate:— ..... 195. **Schleichera.**

Fr. not deply lobed, usually more than 1 cell developed

Fr. sulcately lobed, usually only 1 coccus developed

196. **Nephelium.**
f Sepals connate in a short-tubed calyx; ovary of 1 carpel, a pod:—[p. 77]

**Petals present** .................................................. 278. Cassia.

**Petals 0** .......................................................... 282. Saraca.

• Leaves simple:—[p. 77]
  Leaves opposite:—
  Petals free or 0; small herbs ........................................ 60. Ste
  Petals united in a gamophyllous corolla:—
  Leaves without stipules; large climbers .......................... 732. Symphore^a.
  Leaves with interpetiolar stipules:—
  Flowers aggregated in heads; corolla-lobes valvate ........... 427. Morinda.
  Flowers free; corolla-lobes contorted ................................

Leaves alternate:—
  Leaves without leaf-sheath or ligule:—
  Perianth double, of sepals and petals:—
  Petals free:—
  Sepals not united; stamens arising below the ovary opposite the petals, which have each a basal scale 194. Ap^m&.
  Sepals united in a gamophyllous calyx; stamens from calyx-tube opposite the petals ........... 355. Ho
  Petals connate in a gamophyllous corolla ................... 04.
  Perianth single, of sepals only; leaves stipulate:—
  Stipules connate in a stem-clasping ochrea 787. Poiy^a
  Stipules lateral, free ............................................. B52.
  Leaves with large stem-clasping leaf-sheath and a ligule at junction of sheath and blade ......................... 1124. Melocas.

Class VIII. OCTANDRIA.

• Leaves compound:—[p. 79]
  Leaves dotted with pellucid glands:—[p. 79]
  Style short, persistent ............................................. 130. GlyCOS^p.
  Style articulate at top of ovary, deciduous:—
  Leaves odd-pinnate with all leaflets alternate; unarmed 137. Clause^a
  Leaves 3-foliolate or odd-pinnate with leaflets opposite except terminal; armed:—

---

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VIII.—OCTANDRIA.

11 * 141. Limonia.
Calyx distinctly 4-5-lobed; leaflets usually leaflets
always 3.Leaves not gland-dotted:—[P. 78]
the terminal, or
Leaves odd-pinnate with leaflets opposite except
3-nate:

Trees or shrubs; tendrils 0:—

Leaves simply pinnate; flowers polygamous.
Ovary 1-celled (in this genus the flowers are mostly monocarpous)
Ovary 4-5-celled; flowers always polygamous
dioecious)

Leaves digitately 3-foliolate:—ternate leaves, and
Herbs with slender climbing habit, with twice

Leaves even-pinnate:—

Leaves simply pinnate; trees:—

Leaflets 4 or more than 4; sepals free, ovary
fruit of 1-3 indehiscent cocci:—

Seeds without an arillus:—

Cocci of fruit at first united, at indent 
separating:—

Cocci of fruit deeply divided to nearly
spontaneously separating:—

Cocci oblong; testa of seed membra
capilaginous;

Cocci ellipsoid or sub-3-gonous;
scales of the petals not crested:

Seeds arillate:—

Fruit not deeply lobed, usually in
developed:
Fruit sulcately lobed, usually only one cell

Leaflets 2 only, carpel solitary free, fruit a

Wbs.
Leaves simple; "if compound," l-foliolate:—[P. 78]
alternate:—[p. 81]

S0. * hairy inferior:—[p. 80]

+M*matic herbs; ovules many axial in several

306. mmose*:...
JiENGAL PLANTS. [Artificial G-]

Flowers in panicled umbels; leaves stipulate

Flowers in axillary cymes; ovules solitary from a superior ovary:

Havers in bracteate whorls; petals opposite the petals or lobes of corolla:

353. Homalum........... 1,018. Batomopsis...

Perianth 2-seriate, of calyx and corolla:

Mamens opposite the petals or lobes of corolla:

ITL ff V, * * * * 5

Stamens alternate with or more numerous than petals or corolla-lobes:

Petals united in a gamophyllous corolla.

Petals free:

Small herbs, with glandular hairs; ovules 2-5, free, crowning a 1-celled ovary:

Trees or shrubs, never with glandular hairs:

Sepals quite free:

Leaves scattered; ovary 1-celled with pellucid glandular hairs; petals without scales:

Sepals and petals 4 each, thalamus free from petals:

Capparis petals usually 5 each, irregular:

Xanthophyllum leaves clustered in false whorls, petals with basal scales:

Sepals connate in a gamophyllous corolla:

Style articulate at top of ovary, deciduous:

Flowers all hermaphrodite, armed with spines:

135. Acronychia
Anthers linear-oblong; disk elongate
143. **Paramignya**.
Anthers ovate-cordate; disk cup-shaped
144. **Atalantia**.

Leaf 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. **Buchanana**.

Perianth 1-seriate, petals absent:—[p. 80]
Perianth-segments free:
Shrubs; stipules 0
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
832. **Holoptelea**.
Stipules 0; fruit ovoid
804. **Wikstroemia**.

Leaves opposite:—[p. 79]
Styles free:
Petals 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 only slightly united below; petals connate at base:
Calyx shortly 4-fid
314. **Bryophyllum**.
Calyx deeply 4-partite
315. **Anchoe**.
Stipules or styles connate:—
Perianth 1-seriate (leaves sometimes partly alternate)
804. **Wikstroemia**.

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 petiolar
418. **Gardenia**.
Petals free:
Leaves dotted with pellucid glands (subopposite only) 135.

Leaves not gland-dotted, or if glandular the glands pellucid:
  Sepals only 2, fewer than petals, large and much lmci-
  herbs with fleshy stems and leaves...........71. Portulaca.
  Sepals 4-5, as many as petals, rarely (Memecylon) &
  truncate ; trees, shrubs, qf; if herbs, not fleshy :
  Leaves 3-nerved from the base; calyx-lobes slig.
  imbricate........................................338.
  Leaves penniserved :
    Calyx-tube truncate.........................341. Memecyl
    Calyx-lobes distinct, valvate:—
      Leaves stipulate ; plants of mangrove swamps
      319. Rhizophor*
  Leaves without stipules ; inland plants :—
    Ovary 1-locular ; climbing shrubs
      327. CombretumB-
    Ovary 2-more-locular:—
      Herbs of wet places ; petals small, flat
      342. Ammarnia-
      Shrubs ; petals larger, corrugated
      345. Lawsonia-

**Class IX. ENNEANDRIA.**

Leaves none ; parasitic twining herbs ; anthers dehiscing by valves 802. Cassyth*

Leaves present, always simple:—
  * Leaves alternate or all radical:—[p. 83]
    Venation 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 wing^... . 888. Bly*
      Leaves, at least some, ovate, petioled; fruit winged
      890. Otteli*
    Ovary superior; carpels apocarpous :
      Fruit of indehiscent achenes:—
        Receptacle flat; flowers all hermaphrodite....1015. Alisn*
        Receptacle globose ; flowers polygamous ...1017. Sagittal**
      Fruit of dehiscent follicles.....................1018. Butomopsis*
IX.-ENNEANDRIA.

The natation of leaves reticulate; leaves never radical; terrestrial trees or shrubs.

Leaves 2-lobed, more or less cleft at the tip, digitately nerves from the base. 279. Bauhnia.

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

Anthers opening by longitudinal slits:
  blowers 3-merous; sepals free, 3; petals 6, 2-seriate; carpels several, each 6-8-ovuled. 10. Sagera.

Flowers 5-merous; sepals connate below, 5; petals 5, 1-senate; carpel solitary, ovule 1. 28. 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; staminodes 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.

Lobes of perianth erect in fruit. 799. Phce bsi.

Anthers opening 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.

Anthers not opening by valves:

7-tails connate in a corolla with contorted lobes; ovary inferior.

Petals free, or occasionally absent; ovary superior; styles free. 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 1
    Ovule solitary in each loculus of ovary; leaves sometimes 1-

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. .......................... \[137.\]
      Filaments linear-subulate .................................. 138.
    Ovules 1-2 in each loculus of ovary:—
      Petals valvate; cotyledons leafy, corrugated; 1
      linear-subulate .............................................. 139.

Armed plants; leaves pinnate or 3-foliolate, with leaflets opposite except the terminal:—
  Calyx distinctly 4-5-lobed; leaflets usually 5 or more, rare
  Calyx cupular with entire or obscurely 4-6-toothed
  leaflets always 3 ............................................. 142.
  Ovules more than 2 in each loculus of ovary; armed trees

Leaflets not glandular-punctate:—
  Leaves odd-pinnate:— [p. 85]
    Leaves 3-pinnate ......................................... 213.

Leaves once-pinnate or 3-foliolate:—
  Trees or shrubs; leaves simply pinnate:—
    Leaflets alternate; fruit of 1-5 membranous
    flowers polygamous, only the male flowers 10-staminate

Leaflets opposite or subopposite:—
  Sepals 5, free, imbricate; styles 5, distinct; fruit a berry

Sepals 5, rarely 4, connate below in a cupular calyx:—
  Ovary 1-locular:— [p. 85]
    Ovule solitary; fruit a drupe:— [p. 85]
    Ovule pendulous from a basal funicle ....... 210.
Genera. X. DECAandra.

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\textsuperscript{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.

Leaves simply pinnate.

Leaves even-pinnate:—[p. 84]

Ovary 2-more-celled:—

Leaflets 2; ovary 5-celled 149. 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.


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-pinnae.

\textsuperscript{\textdagger}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 imbricately unequal, the lower
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
leaflets; pods narrow:—
Flowers shortly stalked; leaflets fairly large, not	
narrow at length contorted; unarmed trees
293. Adenanthera*

Flowers sessile; leaflets small, opposite; armed
or small trees:—
Pod turgid with thick edible inesocarp; leaflets not contiguous........................................294. Prosopis*
Pod thin coriaceous, at length contorted; leaflets
minute, contiguous..........................295. DichroBtachys*

Inflorescence capitate:—
Small aquatic or subaquatic herbs, with small thin pod
opening early by the upper suture........296. Neptunia*
Lofty trees, with large thick woody pods tardily dehisce
by both sutures..................................297. XyH

Anthers not gland-tipped; shrubs or undershrubs with
inflorescence capitate and thin coriaceous pods:—
Undershrubs; stigma clavate................298. Desman thus*

Leaves simple; or if compound (Paramignya) 1-foliate:—[p. 84]
I Leaves alternate, or radical:—[p. 88]
† Styles free:—[p. 87]
X. -DECANDIU-

Leaves parallel-nerved, all radical tufted;

Leaves reticulate-veined, nerves digitate or pennine connate, only the styles free:

Leaves conspicuous:

Shrubs, climbing with hooked tendi 8; leaves clustered, penninerved, entnees.

Herbs; ovary superior; styles ő, palminerved, digita Jy lobed, lobes toőL ^ Tamarix.

Leaves small, scale-like; erect shrubs, y {Styles connate, or style solitary:—[P- 85]}

Perianth of 1 whorl only; shrubs or ^ ovules solitary

Perianth-lobes with scales above in each cell of the ovary; seeds 1—

Perianth-lobes with no scales:

Ovules many on parietal placentas, ovary inferior; ő. Geraniuni.

Capsule 3... ovary — ovary.

Ovules 2-3, pendulous from apex ox ..., Terninalia.

Flowers in racemes or spikes...325. Anogeissus.

Perianth in heads...

Petals connate in a gamophyllous coiologia... Agapetes.

Stamens not adnate to corolla-tube... Q, styra X.

Stamens adnate to corolla-tube

Petals free:

§Ovary superior:—[p- 88]

11 Flowers regular: - [P - 88]

Sepals distinct, valvate; o^ yof small, globose, prickly,

Petals glandular at base,

Sepals not glandular at base... fruit & globose of elongated locuclidial capsule, prickly or not

119. Corchorus.

Sepals connate, ov in f - S Séro *

*Leaves not gland-dotted:

than one (Buchananiu) u-v

Fruit a kidney-shaped nut lest in^ fleshy peduncle and disk.....—..--

Fruit a small, nearly dy solitary fertile member of toe o

Buchanania.
BENGAL PLANTS.

Leaves gland-dotted; ovary 2-more-celled [p. 87].

IIFlowers irregular; ovary of a single carpel—[p. 87]

§ Ovary inferior:—[p. 87]

Leaves large palmatitid; flowers in panicled umbels, several-celled, cells each ovuled; calyx-H-shaped, faintly toothed.

Leaves entire, penninerved; calyx-lobes valvate.

Ovary 4-5-celled; cells many-ovuled; shrubs.

Ovary 1-celled; cells 2-5-ovuled; shrubs.

Leaves opposite:—[p. 86]

©Perianth 2-seriate; a calyx and a corolla:—[p. 89]

Leaves stipulate:—

Species of inland forests; embryo small, immersed albumen, not germinating on the tree.

Herbs; styles free, 3-5, or if connate, stigma 3-8-

Ovary and fruit 5-celled; ovules on axial placenta.

Ovary and fruit 1-celled; ovules on a free-central ox placenta:—

Sepals and petals each 5; capsule 3-5-valved; scarious.

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.

Calyx of free sepals.

Shrubs, climbing or suberect; ovary 8-celled; ovules in each cell; fruit of one or more winged samaras:—
XL—DODECANDMA.

Styles 3; flowers small, regular or nearly so.

124. Aspidopterys.

Styles 2 or 1; flowers large, irregular.

Jovary 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.

Heirs; 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:

Laves digitately 3-5-foliolate, not gland-dotted; herbs with narrow

2.-varved, capsular fruit.

Laves unequally pinnate, glandular-punctate; armed trees with large,

Stembose, indehiscent fruit.

Leaves simple:

Laves all radical, parallel-veined; aquatic herbs, styles free:

Ovary inferior, carpels united; 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.
BENGAL PLANTS.

Styles free; stamens in fascicles opposite the petals; ovary superior, 1-celled, placentas parietal, ovules several; trees

855. Homaim

Style simple, or styles connate:

Ovary superior:

Petals connate in a gamophyllous corolla; stamens opposite the corolla-lobes:

Segments of calyx 4 ........................................ 525. Bassi

Segments of calyx 6-8 ........................................ 524. Dichops

Petals free; stamens not opposite petals:

Leaves not gland-dotted:

Ovary 1-celled, placentas parietal; flowers polyga trees with large, globose, indehiscent fruit

59. Taraktogenos.

Ovary 2-more-celled:

Ovules in each cell 2; petals contorted; sepals valvate; leaves entire or slightly lobed:

Calyx enlarging in fruit, the sepals at first shg imbricate; fruit nut-like:

Sepals faintly united at the base only; segment subvalvate in fruit:

Two calyx-lobes expanded into narrow wings

87. Vatic

All calyx-lobes equal in fruit ........ 88. Isiaux*

Sepals quite free; quite valvate in fruit; 3 outer lobes expanded in fruit .... 89. Shore*

Calyx not enlarging, deciduous in fruit; sepals always valvate; fruit an indehiscent or 3-5-cocciou spiny or bristly capsule .............. 118. Triumfetta

Ovules in each cell many; petals imbricate; sepals open in bud; leaves pinnatifid ........ 12G. PeganUfl

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, petals very minute, sometimes 0; carpel solitary, basal in calyx tube with 2 pendulous ovules; fruit a thin-walled dry fleshy drupe ............................................. 306. PygeUfl

Leaves 3-nerved from base; stipules 0; flowers conspicuous; petals valvate; ovary 1-celled with 1 pendulous ovule; fruit a 1-seeded berry ................. 400. Alangm
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 (Tidinum sometimes) the sepals of the perianth of only one series (calyx); stamens inserted on calyx-tube:—

Ovary and capsule 3-5-celled .................. 381. Sesuvium.

Ovary and capsule 1-2-celled .................. 382. 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 corolla .......................... 732. Symphorema.

Petals free; stamens inserted on the calyx:—

Leaves without stipules; ovary at the bottom of the calyx-tube, free .......................... 344. 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, emarginate .................. 320. Ceriops.

Petals 8-14, 2-and .......................... 322. 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.

Leaves compound:—[p. 92]

Leaves even-pinnate; carpel solitary:—

Leaves twice pinnate; leaflets many, small .................. 301. Acacia.

Leaves simply pinnate; leaflets few, large .................. 280. Cynometra.

Leaves odd-pinnate or digitate; carpels many:—

*Leaves digitately 3-foliolate; fruit of many achenes, n* in the calyx-tube [p. 92]
Leaves odd-pinnate:—[p. 91]

Fruit of many achenes not included in the calyx-tube; unarm*ed kerbs. .................................................. 308. *pontentiHs*

Fruit of many or few achenes, included in the calyx-tube; shrubs armed with prickles. ............................... 310. B. 08*

Leaves simple, or, rarely, leaves absent:—[p. 91]

Leaves 0; plants with thick fleshy flattened prickly stems

380. Opuncias.

Leaves conspicuous:—

Leaves alternate:—

Sarmentose shrubs, armed with flattened prickles. . . . . 309. R. 38a, S.

Erect, unarmed trees or shrubs —

Leaves 3-nerved at base; petals valvate; ovary 1-celled and 1-ovuled. .............................................................. 400. AlangiA

Leaves penninerved; petals imbricate, rarely (Pygeum) V/nA* absent:—

Stamens in fascicles opposite the petals; ovary of 2-5 carpels connate in a 1-celled chamber with parietal ovules

385 Hnaliu"*11

Stamens not fascicled opposite the petals:—

Bipe carpel solitary; not enclosed in the calyx-tube

306. PygeumA

Bipe carpels 2 or more, confluent and enclosed in the calyx tube:—

Ovary 5-celled; flowers panicled . . . . . . . 311. Erioboty**

Ovary 2-3-celled; flowers corymbose . . . . . . . 312. Pourthiae**

Leaves opposite:—

Herbs with fleshy leaves; some of the leaves may be alternate:—

Sepals 2 only; ovary 1-celled with basal placenta; petals imbricate; ovary 5 connate in a tube; ovary 5-celled with axial placentas; seeds many

381. Sesuviuni.

Shrubs or trees; leaves never fleshy, all opposite.—

Leaves stipulate; ovules pendulous:—


ovary 2-4-celled............ 322. Bruguiera.

†Leaves gland-dotted; fruit a berry:—[p. 93]

§Limb of calyx closed in, lobes imbricate, rather deeply valvate, separated when in flower; seeds many

382. Psidiu*.
Class XIII. POLYANDRIA.

Leaves alternate;—

1. Clematis. P^\text{o}. A; \text{oa.-pels'free;" petiole sheathing.} .... 3. Thalictrum.

P^*; dist. or imbrate, rarely closed in bud and then 4. Naravelia. 5. GarCima.

Calyx tube almost free from ovary 80. Calophyllum.

1-celled 70. Ochrocarpus. 71. Mesota.

Ovary 1-celled. Cells of the ovary \text{each 2-} 78. M. Crataeva.

Leaves compound — ru 941.

P^\text{o}; \text{oa.-pels'free;" petiole sheathing.} .... 3. Thalictrum.

P^*; dist. or imbrate, rarely closed in bud and then 4. Naravelia. 5. GarCima.

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Leaves alternate;—

1. Clematis. P^\text{o}. A; \text{oa.-pels'free;" petiole sheathing.} .... 3. Thalictrum.

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Calyx tube almost free from ovary 80. Calophyllum.

1-celled 70. Ochrocarpus. 71. Mesota.

Ovary 1-celled. Cells of the ovary \text{each 2-} 78. M. Crataeva.

Leaves alternate;—
BENGAL PLANTS. [Artificial’

IF Sepals connate in a 4-5-toothed calyx; leaves gland-ted, 3-foliolate; fruit a large berry with woody rind [p. 03] 140.

- Leaves simple; or if compound (Citrus) then 1-foliolate:— [P’
- 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. Mec
  - Carpels densely packed on a sessile gynophore...9. Mag

- Stipules 0; petals in 2 series:—
  - Carpels not confluent in fruit:—
    - Petals imbricate........................................ 11. Uv
    - Petals valvate:—
      - Anther-cells not concealed by overlapping connective.
        - Petals of inner series larger than those of outer:—
          - Ovules 6 or more.........................12. Saccopeta
          - Ovules 1 or 2...................................1. Millassa
        - 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, subequally spreading from base:—
    - Ovules many, 2-seriate.......................10. Canang
    - Ovules definite:—
      - Ovules 2-6, 1-seriate on the ventral suture

- Ovules 1-2, basal or subbasal ...18. Polyalthia.
  - Petals of the 2 series unequal:—
    - Petals of outer series spreading; those of inner concave connivent, overarching the stamens and carpels..........................19. Mitrephora
    - Petals of outer series thick, rigid, connivent 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. Dillen}

-
†Hevbs carpels not or only partially cohering :—[p. 04]

Arpels connate below, free above; ovules in each more than 5 petals and petals each 5; leaves dissected. ...5. Nigella.

Carpels not connate; ovules in each not more than 2:—
parcels several, close set on the thalamus; ovule solitary in each 5 petals 5, sepals 3-5; leaves penninerved

4. Ranunculus.

Carpels many, discrete, irregularly scattered and sunk in petals of the turbinate disk; ovules 1-2 in each; petals and sepals many in a continuous spiral; leaves peltate

†Style ovary:

Standing styles adnate to the petals or corolla-tube:—

Ovules in each loculus of ovary solitary; petals connate

525. Bassia.

Ovules in each loculus of ovary 2; petals free or faintly connate

529. Symplocos.

Petals not adnate to the petals or only slightly adnate at the junction of both:

Sepals aquatic herbs; sepals 4; petals numerous:—

533. Nymphaea.

Sepals tubular below and confluent with the disk in which the carpels are enclosed; petals and stamens superior;

Plants prickly

34. Euryale.

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; stamnodes 5 within the stamens....116. Brownlowia.

Anthers elongated, cells distinct; stamnodes 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-foliolate with winged petiole jointed to the blade. ...147. Citrus,

Sepals free:—

88 epals imbricate:—[p. 9G]
BENGAL PLANTS.

[Artificial Gu\textsuperscript{id}e]

Sepals 2-3:—
Sepals 2, petals 4; stigma radiating, sessile

36. \textit{Papaern}\textsuperscript{t}

Sepals 3, petals 6; stigma lobed, style short, distill

37. \textit{Argemone}\textsuperscript{*}

Sepals 4-5:—
Sepals 4, in 2 decussate pairs, the inner imbricate, outer at times subvalvate; ovules on parietal placentas:

Ovary stalked

32. Capp\textsuperscript{arl}\textsuperscript{A}

Ovary sessile

59. Taraktogen\textsuperscript{b}\textsuperscript{c}

Sepals 5, regularly imbricating:—
Sepals deciduous; ovary 1-celled; placentas plane or intruded:

Flowers large yellow, appearing before the leaves

55. \textit{Cochlospermum}\textsuperscript{n}

Flowers medium white or pink, appearing with leaves

50. \textit{B**}

Sepals persistent:
Ovary of 1 carpel; a woody climber; fruit a follicle

6. Deling

Ovary of 3-10 carpels, connate; trees or shrubs

Fruit a capsule:
Peduncles many-flowered

84. Saurauj\textsuperscript{t}

Peduncles 1-flowered

82. Schif\textsuperscript{l}\textsuperscript{t}

Fruit of 3-10 drupes seated on a broad disk

150. Ochna\textsuperscript{*}

§ Sepals valvate:—[p. 95]
Petals thin, coloured, unguiculate, entire or subentU\textsuperscript{w}\textsuperscript{e} 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 from wia-

Fruit small, globose, indehiscent or separating into cocci; prickly

118. Triumfetta.

Petals without a basal scale, inserted directly round stamens on a contracted torus; fruit a loculicida

119. Corchorus.

Petals rigid, white or sepaloid, almost always laciniate, induplicate-valvate in bud; anthers linear; stamens arising in groups opposite the petals and alternate with lobes of » 5-lobed torus; fruit drupaceous

120. Elaeocarpus.
Glass XIV. DIDYNAMIA.

XIV.—DIDYNAMIA.

a both plicate and slightly 2-labiately imbricate

or less markedly 2-labiately imbricate or contorted,
Carpels cor placentas more than 2-ovuled or if only 2-ovuled (nearly
ace)e the ovules not collateral:—[p. 102]

aves 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. Doliachandrone.
Calyx not spathaceous; corolla-tube ventricose:—
Calyx irregularly deeply 3-5-lobed in flower, closed.m
bud; capsule falcate or twisted ...682. Heterophragnia-
Calyx truncate or shortly unequally lobed in nowe,
closed or open in bud; capsule with a thickened spon
septum.................................683. Stereospermum.
Capsule with double wings along the margin, oblong, compressed
right angles to the septum; calyx large or swollen,ampanu-
late, limb 5-fid.................................684. Pajanda
Leaves simplel rarely 0, herbs —
Ovary 1,ceiied ; placentas parietal or intruded :—[P—m]
fruit a
Leafless parasitic herbs; placentas not intruded,
2-valved capsule :—[p. 98]
Calyx spathaceous, split in front,........................669. Eginetia.
spreading [p. 98] .............................
**Artificial G**

ttCALYX unequally 4-toothed or split both behind &d front; corolla with upper lip more erect than the 1o**

3-fid lip [p. 97]...........................................670. *orobanch*

**Leafy herbs; placenta intruded; leaves alternate or opposite:**—[p. 97]

Fruit a 2-valved or ultimately 4-valved tetragonous capsule

G8G. *Sesamum*

Frnt an indehiscent or irregularly breaking up berry :

Calyx plicate; fruit bursting irregularly; disk 0

676. *Stauranthera*

Uilyx not plicate; fruit indehiscent; disk annular

677. *Rhynechium*

+ovary perfectly 2-celled:—[p. 97]

tOvules on each placenta more than 2, usually many, not superposed 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 is*

*itud ............................................. 642. *Corypha*

Uave at least the lower if not all o^te"; "eoro*
inbud !^ n Sho r t (Sc?fUlu/t) the ^V lobes

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. *Lilium*

Corolla saccate but not spurred infront.....

044. *Antirrhinum*

CoioUa tube not enJarged ft fte ^ in front ; m/h notc per*

*Caroll: capsule opening by valves:-

"Bonded throat:—[p. 100]

1. Stamens all inserted within the tube:—[p. 100]

1. Sub*ant*^ lipped, lobes all rounded

2. aTn ^ hei Cells Plicate, confluent 1-locular;

*Calyx-lobes much curved; leaves oPP0Site « shorted; capsule

globose [p. 99]..........................................045. *Russelia*
O'Calyx-lobes hardly imbricated; filaments filiform; 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 immost, much narrower than the others; corolla with 5 subequal lobes. ....... 653. Herpestis.
ITStamens with only posterior pair inserted within corolla-tube, the anterior pair inserted on corolla-tube: capsule septicidal; leaves all opposite:

Calyx with 3-5 ridges or wings; mouth 3-5-toothed or 2-lipped ................. 655.

Calyx without wings, 5-lobed or 5-partite, segments equal..................... 650.

§ Corolla with upper lip or 2 upper lobes inmost leaves opposite below, often alternate above; wholly partially parasitic plants; capsule loculicidal:—[P. 78]

Leaves entire or dentate or reduced to scales:

Corolla subglobose-campanulate, limb oblique; calyx campanulate; anther-cells both perfect... 664. Alectorandra

Corolla narrow-tubular; only one anther-perfect:

Calyx tubular, 5-toothed or 5-fid; corolla-tube narrow throughout; anthers 1-locular, vertical subequal; basal leaves much larger than above......................... 605. Buchnera

Corolla-tube abruptly incurved at or above middle, two upper lobes smaller than the others; basal leaves not much larger than those above........... 660. Siphonoglossum

Calyx spathaceous, compressed, split in corolla slightly ventricose at the throat, obscurely 2-lipped; anthers with one perfect an empty sessile cell. 667. Centranthera*

Leaves pinnately dissected with linear segments; calyx campanulate; corolla-tube short, throat much widened, lobes subequal; anthers with one empty stipitate cell

668. Sophubi*.

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. Ebermaieria.
Ovules not in 2 rows; corolla-lobes twisted to the left in bud.

**Cardanthera.** Ovules on hard upward-curving retinacula; ovules in one row or else arranged alternately in each cell.

See [p. 100] Corolla with no upper lip, the lower lip large, expanded, ovules 2 in each cell:

Anterior filaments with an excurrent process.

**Blepharis.** Anterior filaments without any process.

**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; capsules normally with G or more seeds:

Corolla distinctly 2-lipped.

**Hygrophiila.** Corolla subequally 5-lobed:

Bracteoles large; capsule clavate with a solid base.

**Ruellia.** Bracteoles small, narrow, or 0; capsule seed-bearing throughout:

Anthers acuminate at tips.

**Echmanthera.** Anthers blunt-tipped.

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 nervet.

**Petalidium.** Bracteoles 0.

**Phaylopsis.** Placentas not separating elastically from the valves:

Anthers minutely mucronate at the base.

**Calophanes.** Anthers mutiuous.

**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.

**Crossandra.** Anthers 2-celled; sepals subequal.

**Asystasia.** Corolla distinctly 2-lipped; anthers 2-celled.
• Carpels 1-ovuled, or if 2-ovuled the ovules collateral; leaves opposite:—[p. 97]
  Fruit a loculicidally 2-valved capsule, the valves separating elastically from apex downwards; climbing shrubs.

<table>
<thead>
<tr>
<th>087.</th>
<th>Thunbergia</th>
<th>rarely</th>
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</table>
  Fruit indehiscent with 1-4 pyrenes, or separating into 2 or more, 1-seeded cocci or nutlets:—
  Øvary entire; fruit containing 1-4, rarely more, pyrenes subcapsularly, each valve with 1 pyrene attached; leaves glandular:—[p. 103]
  Leaves digitately compound; trees or shrubs; inflorescence 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 ovoid or cylindric; calyx small; shrubs or una rarely herbs:—
  Fruit succulent or leathery, not dehiscent

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<tr>
<th>719.</th>
<th>Lantana</th>
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  Fruit dry, partially dehiscing; one species herbaceous

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<th>720.</th>
<th>Lippera</th>
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  Fruit with 4 one-seeded pyrenes; spikes elongate; calyx tubular; herbs

<table>
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<tr>
<th>722.</th>
<th>Yerbam</th>
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  Inflorescence racemose; fruit fleshy with 2 two-seeded pyrenes; shrubs

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<th>723.</th>
<th>Durfee</th>
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  Inflorescence centrifugal, cymose:—
  Cymes lax or dense, paniculate or thyrsoid; tree shrubs:—[p. 103]
  Fruit indehiscent:—
  Drupe containing one 4-celled pyrene; erect trees or shrubs:
  Flowers large, an inch long

<table>
<thead>
<tr>
<th>72G.</th>
<th>Gmelina</th>
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  Flowers very small

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<th>727.</th>
<th>Premna</th>
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  Drupe containing four 1-seeded pyrenes:—
  Calyx campanulate or tubular or suburceoia truncate, 5-toothed or deeply 5-fid; erect shrubs

<table>
<thead>
<tr>
<th>729.</th>
<th>Clerodendron</th>
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  Calyx rotate, widely patent, entire or obscure, 5-lobed; climbing shrubs

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<th>730.</th>
<th>Holmskioldia</th>
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</table>
  Fruit breaking up into 4 valves with 1 pyrene attached each; trees or shrubs

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<th>731.</th>
<th>Caryopteris</th>
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</table>
Cymes densely capitate, 3-9-flowered, the heads subtended by 3-4 involucrate bracts; fruit small, nearly dry; large climbers [p. 102].

**Congea.** 734.

- 4-lobed or -partite; fruit of 4, rarely fewer, nutlets; leaves almost always gland-dotted:—

Nutlets with the attachment small, basilar or to the outer side:—[p. 105]

- Nutlets dry:— [p. 104]

*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 exserted and the lowest corolla-lobes 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

**Orthosiphphn.** 737.

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:— [p. 104]

**Acrocephalus.** 738.

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:—
BENGAL PLANTS.

[Artificial Guide]

Racemes simple, bracts conspicuous; calyx fruit rugosely pitted near base; posterior even when the upper lip is 3-lobed wider in the lateral lobes. 730. *Geniospora*

Bacemes panicled, bracts small; calyx not pitted, lateral lobes when the upper lip 1-lobed subequal with anterior lobes, when the upper lip is 3-lobed subequal with posterior lobe. 740. *Moschosis*.

**Lower lip of corolla deflexed, concave boat-shaped saccate:**—[p. 103]

Corolla "with upper lip very short, obtusely toothed, lower lip much elongated, boat-shaped:" 741. *Plectranthus*.

Filaments free. 741. *Plectranthus*.

Filaments at their bases connate in a round the style. 742. *Coleus*.

Calyx very oblique 2-lipped with the upper lip large entire inflexed and closing calyx-mouth and lower lip truncate obscurely 4-toothed; lipped slit in front, the solitary lip 5-toothed incurved but not quite occluding the cavity mouth. 743. *Anisoschila*.

Corolla obscurely 2-lipped with 2 upper lobes similar and subequal to 2 lateral, all about as long; the abruptly deflexed saccate lower lip with thickened margins and much contracted base; calyx-teeth subequal. 744. *Hyp*.

©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 spreading; stamens included in the tube. 745. *Lavandula*.

Stamens erect, or ascending or spreading:—[p. 103]

JCorolla-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]
XIV.-DIDYNAMIA.

Lower corolla-lobes subpatent; whorls in glomerate or paniculate or solitary interrupted spikes; filaments bearded or naked ................746. **Pogostemon.**

Lower corolla-lobes like the others; whorls in slender dense continuous spikes; filaments bearded ..........................747. **Dysophylla.**

• Lobes of corolla ө, 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-toothed ..........750. **Micromena.**

Calyx distinctly 2-lipped ..........751. **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; 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 o* the upper lip:—[p. 103] 750. **Perilla.**

Corolla deeply slit behind and apparently 1-Hppe.,
small upper lobes along with the small lateral pair ispring from the contracted base of the very large lower lobe

7C0. Teucrium

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. 

**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 irregular? 1-senate; flowers yellow..................39. Nasturtium

Pods flattened; seeds compressed, 1-seriate; flowers white

40. Cardamin

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 conic*? 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 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

40. Lepidium*
Class XYI. MONADELPHIA.

stamens definite, fewer than 20:—[p. 117]

Tw e s compound :—[p. 110]

Carpel solitary; fruit a dehiscent or indent

Flowers regular; petals valvate; leaves even

stamens 10

only once ternate or

Flowers irregular; petals imbricate; leaves
digitate or pinnate:

others neither mucro-

Plants with basifixed hairs or glabrous; am

ex to base — [p. 108]

Pod dehiscent by both sutures, from av

Leaf-rachis ending in a bristle; stain

above; leaves even-pinnate

Leaf-rachis not ending in a bristle; leav

leaflet:—

223. Crotalaria

Leaves digitately 3-7-foliolate

Leaves pinnately compound:

* *Leaves 3-foliolate :—[p. 106]

Nodes of the rachis not swollen:

Style bearded below the

Psophocarpus

4-w

Sty

Btamens 10 fertile, at

ultimately 2-adelphous by

Glycine.

stamen

intercalary sterile,

Stamens 5 fertile, with 5 in

289. Terainnus.

Nodes of the rachis swollen:—

Canavalia

Upper lip of calyx projecting

u t lip of calyx not pvojecting:—
Unarmed climbers:—

Pod oblong, turgid; anthers dimorphous...

6 fertile

Pod linear, flat or subcylindric;

all

seede... 241. Dioclea.

Pod oblong, turgid; anthers dimorphous...

6 fertile

Pod linear, flat or subcylindric;

all

seede... 241. Dioclea.

Arm... 245.

**Leaves 5- or more-foliolate:—[p. 107]

Style bearded below the stigma; flowers unequal petals; standard large... 249. Ch...

Style not bearded; flowers medium; standan longer than other petals:—

Leaflets closely parallel-veined, pod thin, dehiscent... 251. Teph...

Leaflets reticulately veined; pod thick, dehiscent... 252. Mi...

IIPod indehiscent:—[p. 107]

Pod not segmented:—

Leaves odd-pinnate:—

Trees or shrubs; margins of leaflets entire:—

Leaflets opposite:

Pod wingless... 253. Pong...

Pod winged... 254. Dem...

Leaflets alternate:

Flowers small; pods narrow... 255. Dalberg...

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 hypogeal fruits; stamens 9-10... 250. Arachis...

llachis of leaf not ending in a bristle; large trees with pulpy pods; stamens 3... 283. Tamarind...

Pod of several muricate 1-seeded segments; anthers dimorphous; leaves digitately 2-4-foliolate... 261. Zornia...

§Plants with hairs on twigs leaves and calyx fixed by terminal centre; pod thick; leaflets 3, large, toothed [p. 107]

273. Cyamopsis...
XVI.-MONADELPMIA

† Carpels more than 8 or connate in a syncarpous ovary:—

[Page 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. \^rhoea.
Leaves digitate; styles connate at base; fruit a group of free follicles; perianth 1-seriate, petals absent...10. Sterculia.

Style simple or stigma sessile:—

Leaflets dotted with pellucid glands..............................142. \^nyma.
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. \^clea.
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. H0]

Leaflets coarsely serrate, rarely entire; fruit a stipite; seeds with fleshy albumen and thin cotyledons; ovules in each cell 1-2:—

Flower elongated; calyx* 5-pet, petob 

\mbox{embrj}

single 

\mbox{Melia-}

valvate; containing

5 horny pyrenes.................................155. Cipadessa.

Leaflets entire; seeds with no albumen; cotyledons 

\mbox{a capsule or a}

Fruit a capsule, dehiscence Jooulicid} .-IB.
Flowers and staminal tube oblong or linear;—

Anthers linear; disk short annular, solitary in each cell of the ovary

156. Chiscocheton*

Anthers short; disk cylindric, the ovary; ovules 2 in each cell:

Flowers and staminal tube globose or style short or 0:—

Anthers included; filaments united; petals 3:

Anthers exserted; filaments free toward petals 4-5:

Fruit a berry; petals 5; anthers included

[p. 109]............................................ 158, * Anoora*

Ovules 3-8 in each cell; fruit a large capsule, large, thick, tessaroid, without arillus [p. 109]

Carapa*

× Seeds winged:—[p. 109]

Disk present; petals spreading; staminal tube

Petals oblong; staminal tube urceolate; disk annular; seeds albuminous, winged only at end

Petals obovate; staminal tube cupular; disk wide; seeds without albumen, winged at both ends

160. Soymid*

Disk 0; petals oblong, suberect; staminal tube cylicric; seeds without albumen, winged only below

165. Chickrassia-

× Leaves digitate [p. 109]...................... 101. Eriodendron*

Leaves simple or 1-foliolate:—[p. 107]

X Leaves parallel-veined:—[p. 111]

Leaves distichous with a large stem-clasping sheath and a verse ligule at junction of sheath and blade; blade articulate with 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 present glume-like and not keeled............ 1118. Oxytenanthera-

Leaves with leaf-sheath small or absent; blade not articulate with 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, subplicately nerved; flowers small, raceme on a solid slender firm scape with scarious bracts; rhizome wiry.................................946. Pelosantines.

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; flowers small

Ovary inferior; flowers large

956. Pancratium.

Perianth 2-seriate 2-merous, stamens 4; stem leafy; leaves usually opposite or whorled

144. Atalantia.

Leaves not glandular-punctate:

- Sepals free; stamens not opposite the petals:—
  - Sepals imbricate; styles free................127. Geranium.

- Sepals valvate, or (Xanthium) absent:

  Petals connate in a tubular corolla with inflated 5-toothed limb

  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:

Anthem 15, in 5 groups of 3 with alternate

with 5 staminodes..............100. Pentapetes.

Anthers S, staminoto 0:

111. Meloohia.

...... Waltheria.
BENGAL PLANTS.

+ Petals concave at base, appendage #

+ Petals with a clawed ovate blade, 5-angled and 5-winged... 114.
+ Petals with a linear 2-fid blade; globular, tubercled... 114.

= Sepals connate; stamens opposite petals

*Flowers irregular:— [p. 111]
+ Petals united in an oblique, 2-lipped corolla, with upper and 3-lobed lower lip?... 115.
+ Petals not connate in a tube:—
  + Stamens 8 or fewer; lowest petal (keel) largest; free; anthers opening by pores:—
  + Fruit a 2-celled loculicidal capsule; herbs or shrubs or undershrubs:—
  + Stamens 8; two inner sepals wing-like, petiolar.

02. Polys... 61.

105. Surcula... 222.

1(Perianth 1-seriate:— [p. 111]
+ Erect trees or shrubs; perianth-segments valvate; anthers opening at the top of a staminal column:—
  + Anthers several-seriate; ovary with cells 2-more-ovulæ... 105.
  + Anthers 1-seriate; ovary with cells 1-ovulæ... 106.

Climbing shrubs, or erect, prostrate or climbing by 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. **Celosia.**

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. **ffirua.**

§Leaves opposite; rarely leaves 0:—[p. H1]

*Perianth 2-seriate; both calyx and corolla present; corolla always gamophyllous; carpels 2 free, only the styles united; pollen aggregated in waxy masses (pollinia):—O 116 J.

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 valvate

570. **Genianthus.**

Pollen-masses solitary in each cell (10 in all), sessile or peduncled in pairs on the corpuscle:—

*Pollen-masses pendulous from the tip or side of the corpuscle below the edge of the stigma; anthers with a membranous inflexed apex; seeds with coma:—[P. 14j.

Corona double, the outer annular attached to the corolla, the inner of 5 free, ligulate scales adnate to the back of the stamens; corolla wide rotate-campanulate, anthers filaments 5-lobed; stems twining .................. OIX

Corona single or, if double, the outer as well as the inner attached to the stamens:—

O Stems leafy erect or climbing, not jointed:  L1.
Stems erect; corolla-lobes valvate; corona single or 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

Corolla rotate; coronal processes erect, spoon-shaped, and ligulate on the face...573. Asclepias

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 (Raphistemma and sometimes Pentatropin) not annular:—

Processes of inner corona free from smooth staminal tube; outer corona with 5 distal lobes opposite the anthers and with a scale or ligule (inner corona) adnate to face of each lobe; corolla campanulate or subrotate

575. Cynanchinus.

Processes of inner (or only) corona adnate to staminal tube:—

Processes of the solitary corona ligulate, corolla campanulate...576. Raphistemma

Processes of inner or only corona compressed, often spurred on the back; corolla rotate or funnel-shaped:—

Outer corona minute or absent; if Vexsetit 5-10-lobed with the longer or only 1 lobe opposite the anthers...577. Pentatropin

Outer corona conspicuous, always present 5-10-lobed with the larger or only 1 lobe alternate with the anthers...578. D. melastoma

579. Sarcostemma.

†Pollen-masses erect, parallel with or rising above the edge of the stigma, if horizontal or pendulous (rarely in Tylor) phora) still with an erect pedicel.—[p. 113]
XVI.-MONADELPHIA.

•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 (*Typharum* sometüneti), *Wicn vnh etatnenR* inserted in the throat or tube of the corolla:—

[S. 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; flowers yellow or orange, salver-shaped

585. *Pergulana.*

Scales of corona stellately spreading, thick and fleshy, attached to staminal tube; flowers green, rotate...586. *Drejea.*

Stamens arising from throat or tube of corolla, scales of corona laterally compressed, to which attached to staminal tube, more or less.
BENGAL PLANTS.  [Artificial Guide

* Corolla-lobes absolutely valvate, the arising from the base of the corolla; scales attached to staminal tube: — [p. 115] 587. *Tylophora. stamens corolla

588. Discijjjj corolla-lobes absolutely valvate, the arising from the base of the corolla; scales attached to staminal tube: — [p. 115] 587. *Tylophora. stamens corolla

Scales of corona erect, membranous, urceolate. 588. Discijjjj Scales of corona stellately spreading, thimpley fleshly; corolla rotate; anthers rarely a membranous tip. 589. Ceroppeg

—Anthers without a membranous inflexed tip). double, the outer annular 5-10-lobed staminal tube, inner of 5 scales opposite anthers a to face outer; stamens attached to base of corolla tubular with subglobose base and valvate I. shaped limb, the lobes cohering at their tips; twining; seeds with coma [p. 115] 590. Ceroppeg

{Perianth 1-seriate : —[p. 113] 589. Ceroppeg
Perianth tubular, corolline, constricted above the ovary, in bud:—

Flowers large, involucrate, bracts connate; stamens 5-

7G2. Mirabia.

Flowers small, paniculate or umbellate, bracteolat attached stamens 1-5. 7G3. Boerhaavia

Perianth of scarious, imbricate, free or nearly free white coloured sepals: — Anthers 2-celled: —

Flowers all perfect: —

Stamens with interposed staminodial filaments: —

Sepals hyaline, woolly. 774. Achyrante.

Sepals -spinescent. 775. Achyrante.

Staminodes 0. 776. Alternanthera. Staminodes 0. 777. Gomphrena.

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. 118]
leaves opposite, simple, glandular-punctate; sepals imbricate

leaves alternate, not glandular-punctate:—
leaves simple:—[p. 118]

Ovary inferior, 2-more-celled; petals imbricate:
Stamens all perfect; fruit angular, Barringtonia.
valvate or imbricate:—
Stamens not all perfect, those of inner or outer series or both
without anthers; fruit ovoid or globular, Careya.

Ovary superior, 2-more-celled:—

Anthers 2-celled:—
Sepals passing gradually from bracts, camellia.
imbricate:—
sepals concolorous; petals concolorous;
sepals valvate in a calyx at first sparingly
removed:—

Anthers 1-celled:—
Carpels when ripe separating from the axis
indehiscent cocci:—[p. 118]

Styles as many as the carpels:—
Bracteoles 5; ripe carpels after separating
1-seeded; ovules solitary ascending.
Stigmas linear, carpels many;
Stigmas capitate, carpels 8-12;
Braoteoles 0; ripe carpels after separating
Carpels without a false dissepiment
Ovules, solitary pendulous; carpels
noon- and noon-flowering Sida.
and flowers . . . . . . . . VaT or more-seeded; after
Ovules 2 or more; carpels 1-8
noon- or evening-flowering plants
leaves and medium
Carpels with a transverse false dissepiment

Styles twice as many as the carpels; carpels after separating;
Carpels opposite sepals; indehiscent
bracteoles 10; flowers large; after separate
Carpels opposite petals; indehiscent

Bracteoles 5, connate; carpe
armed; flowers pink [p. 118].
BENGAL PLANTS.

TORACTEOLES intermixed with flowers, or 0; dense heads, white or yellow; carpels when ripe forming a capsule:—[p. 117]

Carpels spreading; seeds reniform:
Ovary 3-celled; ovules 2 in each cell, ascending.
Ovary 5-celled; sometimes spuriously 10-celled, dissepiments; cells opposite sepals, 3- or 10-angled, flowers axillary.
Stigmas cohering in a club-shaped mass:—
Bracteoles 3, large, cordate; seeds cottony.
Bracteoles 3-5, small; seeds not cottony

§Leaves compound:—[p. 117]
Leaves digitate; petals contorted; flowers large; ovary 5-celled:—
Calyx 5-cleft; fruit oblong, woody, indehiscent; packed in cotton; staminal tube long; flowers white.
Calyx truncate or irregularly toothed; fruit ovoid, dehiscing; seeds racked in cotton; staminal tube short; flowers
species) red.
Leaves equally twice pinnate; petals valvate; flowers small; ovary of 1 carpel:—
Pod straight, with thin valves:—
Sutures thin; pod indehiscent, or if dehiscent the not opening elastically;...
Sutures thickened; pod revolutely dehiscent, the opening elastically from apex to base... Pod twisted, with coriaceous valves....
Pod septate between the seeds, indehiscent; valves fleshy; sutures thickened...

Class XVII. DIADELPHIA.

Stamens 6, in two antero-posterior bundles of 3 each... Stamens 10, in an anterior bundle of 9 with a posterior single in two lateral bundles of 5 each:
Plants with **K**-gland-tipped:—[p. 122]

Pod dehiscent by both sutures:—[p. 125]

Leaf-rachis ending in a bristle or tendril; leaflets even-pinnate

**P**es large, foliaceous, oblique at base; stamens 9 + 1:—

**I**e not bearded; wings free from staminal sheath; leaflets

**S**eeds with a slender funicle; pod turgid ...216. **Cicer.**

**I**e bearded; wings more or less adnate to staminal sheath;

**S**eeds entire; seeds with short funicle:—

Style sheath oblique at the mouth; pod compressed:—

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:—

**P**od compressed; style flat, dilated at tip...219. **Lafchyrus.**

**P**od turgid; style 3-cornered, dilated upwards throughout

220. **Pisum.**

enfolding tearing a terminal leaflet; leaves odd-pinnate or

**P**e or 1-foliolate or digitately compound:—

**L**eaves digitately 3-foliolate or pelted 1-foliolate, glandular

beneath:—

**P**od turgid; leaves digitately 3-foliolate with bracts small, or

1-foliolate with bracts large; funicle centric

224. **Flemingia.**

depressed between the seeds; leaves (in our species)

1-foliolate with bracts small; funicle attached near end of

225. **Eriosema.**

Leaves pinnately compound, rarely 1-foliolate:—

**L**eaves 2-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:—

**C**alyx-lobes accrescent, scariously membranous, the

lowest lobe largest.........................226. **Cyllista.**

Calyx-lobes not accrescent, or if accrescent subequal

and not scarious.........................227. **Rhynchosia.**

Ovules 4 or more:—

**C**limbers; stigma small terminal:—[p. 1230]
BENGAL PLANTS.  [Artificial Guide]

Tod linear-acuminate, hardly depressed between the seeds. 228. Durbanar.  Obon, e-obtuse, deeply transversely between the seeds. 220. Atylos.  Woody shrubs or undershrubs; stigma dilate, obl. pod acut e, d ee, transversely. 228. Bana-

Leaves when the SGeds tti. " o J". 230. Cajan.  [p. 119]  glandulain.  ben. leaflets stipulate:

Style bearded below the stigma:

Poc. wood gma:

obli woody, septate between the velvety seeds; s. que, conicous, not septate between the seeds:

Stigma oblique:

Keel spirally twisted 232. Phaseolus.

Keel not spiral:

Style filiform 233. Yi&n*'

Style flattened upwards 234. Pachyrhizus.

Stigma terminal 235. Dolichos.

Style not bearded below the stigma:

Reaches of racemes not swollen:

Calyx-tube cylindric with oblique truncate mouth; style dilated in the middle; standard erect

Node. S, W, G, F, C, P, P, F, C, M. Calyx-tube upper teeth campanulate > margin toothed; the petiole subconnate; style uniform; standard 1*

Petals of equal length:

Petals far exserted; stamens usually more or less monadelphous 242. Puerraria.

Petals exserted: upper lobe of calyx 2-toothed. 243. Galactia.  leaves 1-foliolate; upper lobe of calyx 2-toothed

Petals very unequal:

Anthers un.fem. keel, and wings both shorter than standard; almei, ttes; stamens often

Sheets p. boUS. 245. Erythrina-

keel and wings; olmbera 246. Mucuna.


**XVII. BIADELPHIA.**

121

Jlieavo

*Pod* the ventral suture usually opening along the ventral suture; leaves exstipellate:

**P**ods long, subglobose, hardly longer than calyx:

**P**ods subglobose, hardly longer than calyx:

**P**ods subglobose, hardly longer than calyx:

**P**ods flattened, much longer than calyx:

**P**ods straight or curved, not spiral

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247. Butea. Pods very unequal; flowers large.

248. Spatholobus. Pods very unequal; flowers small.

249. Cmoria. Pods dehiscing from below the stigma; flowers with very unequal petals.

250. Sesbania. Pods dehiscing transversely septate between the seeds; stamens truly septate; stamens sub-1-adelphous, the vexillary being united by its middle to the sheath:

251. Tephrosia. Pods dehiscing transversely septate between the seeds; stamens truly septate; stamens sub-1-adelphous, the vexillary being united by its middle to the sheath:

252. Millettia. Pods dehiscing transversely septate between the seeds; stamens truly septate; stamens sub-1-adelphous, the vexillary being united by its middle to the sheath:


255. Dalbergia. Pods subglobose, hardly longer than calyx:

256. Pterocarpus. Pods flattened, much longer than calyx:

257. Melilotus. Pods subglobose, hardly longer than calyx:

258. Trigonella. Pods straight or curved, not spiral
Stamens 9 in a sheath slit above, with a free vexillar stamen; leaves 1-3-foliolate:—

Stipules spinescent; leaves always simple; joints hardly separating; vexillar stamen always free.

262. Alhagi.

Stipules not spinescent; leaves usually 3-foliolate; 1-foliolate; pod a solitary, 1-seeded, flattened segment; vexillar stamen sometimes partially united to the calyx.

263. Lespedeza.

Stamens in 2 bundles of 5 each; leaves pinnate; pod papillose or weakly muricate:—

Leaves even-pinnate, end leaflet replaced by a stipule; pod folded together within the calyx.

Leaves odd-pinnate; pod straight, exserted; marsupium

265.

J (Leaves stipellate; stamens 9 and 1, occasionally sub-adelpous; 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.

267. Uraria.

Calyx-teeth lanceolate, accrescent.

Pod straight, exserted:—

A tree; joints of pod thin, wing-like, large; flowers from old wood; stamens dimorphic in

209. Oueria.

Herbs, rarely shrubs; joints of pod not winged; flowers from the year’s shoots; stamens unitellar.

Joints of pod thin, or, if coriaceous, broader than thick; if as thick as their width much longer broad; sometimes opening along lower suture.

270. Desmodium.

Joints of pod coriaceous, about as thick as broad and long.

271. Alysiearpus.

Leaves pellucidally gland-dotted; leaflets (in our species) of their margins toothed; stamens sub-1-adelpous; ovule solitary; pod indehiscent [p. 121].

272. Psoraie.

Plants with hairs on twigs, leaves and calyx fixed by their centre connective of anthers mucronate or gland-tipped; leaves simple compound [p. 119].
Class XYIII. POLYADELPHIA.

Leaves 2 or more opposite; gland-dotted; carpels several, connate in a ovary; stamens 20 or more:—

Leaves alternate, 1-foliolate; petiole winged; fruit indehiscent with lathery rind:—

Leaves opposite:—

Leaves alternate or opposite; flowers in heads or spikes; fruit a_J-valved capsule:—

Leaves opposite; flowers in heads or spikes; fruit a small or large berry:—

Class XIX. SYNGENESIA.

Treated in heads:—

Petals free; 'rait a fleshy drupe:—

Petals connate in pairs; fruit capsular:—

Corollas of all the flowers tubular to near the mouth, or if any flatly expanded from a tubular base (ligulate) then only the marginal florets of flower-head (ray-florets) so expanded; sap not milky:—

Anthers cleft at base and appendaged at apex; style-am* subulate, hairy; leaves alternate:—

Heads distinct; many-flowered:—

Pappus absent; achenes 4-5-angled:—

Pappus present; achenes 10-ribbed:—
BENGAL PLANTS.

Pappus short, fugacious .................. 439. *Centratherum*
Pappus long, copious ...................... 440. *Yernonia*

§§Heads 1- or few-flowered but crowded into dense m*68 resembling single heads; pappus chaffy [p. 123]

441. *Elephantopus*

*Anthers subentire at base, either truncate or appended at apex; style-arms obtuse, papillose; leaves opposite :—[P-133 -]

Anthers truncate at tip ...................... 442. *Adenostemma*

Anthers appended at tip  :

Pappus paleaceous; receptacle sometimes paleaceous

443. *Ageratum*

Pappus of slender hairs; receptacle always naked :

Bracts of involucre numerous, several-seriate

444. *Eupatorium*

Bracts of involucre 4, with sometimes a small outer one

445. *Mikan*

{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 *InuleuU) flowers purple with bracts many-seriate, but if so with the heads at least heterogamous:—[p. 123]

§Anthers appended 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 subentire 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

446. *Cyathoclin*

Achenes flattened or subterete with a terminal toothed

\textbf{Flop f l y p a p p u s - r i n g} ................................. 4*7. *Grangea*

rioter-heads with distinct ray-florets :

\textbf{a e f l o a r r a y-florets liguleUte, never yellow, ligules 2-3-seri- l p a p p u s l o g g} copious [p. 125] ...448. *Erigeron.*
Ray-florets slender, tubular or with very short gules, yellow like those of disk:—[p. 124]

Pappus short, scanty. 450. Thespis.

Anthers cleft at the base or rarely (Laggera) with ases subentire and, if so, with the style-arms of the hermaphrodite florets filiform; style-arms filiform, linear 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. Epaletes.

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. 456. Athroisma.

Style-arms of hermaphrodite florets truncate; bracts of the involucre hyaline:

Flower-heads many-flowered; heads heterogamous disciform; receptacles naked; hoary or woolly herbs [p. 126]. 457. Gnaphalium.
(Flower-heads 1-flowered; heads crowded in pseudo-paleaceous receptacles, the bracts of the involucral heads simulating paleas; glaebules [p. 125]..........................)

Female florets, if present, ligulate; ne
gamous but florets usually all fertile
style-arms, rounded or dilated at their tips, naked:-[p. 125]
Achenes faintly ribbed; flowers usually
pus-hairs all slender, those of ray-florets

Achenes distinctly ribbed; flowers
discoid; pappus of outer florets scaly, of
hair-like

**Bracts of the involucre 1-seriate, subequal, n
with sometimes a few short outer bracts (calycu
base; heads heterogamous or homogamous; subentire at the base; receptacle naked:—[p-
Leaves alternate; pappus of fine hairs, generally copious; style-arms of hermaphroditic truncate or obtuse, penicillate or with a hairy
Heads all homogamous; florets in our
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

Ifillecceptacle 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 opp
villous herbs........................................45. L
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,...4G7. **Zinnia.**
Corollas of all the florets deciduous:—

1. Achenes 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-o-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:—

M Awns of the pappus deciduous or persistent, intermediate scales present, persistent; leaves always alternate [p. 128] ^

473. **Tithonia.**
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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. Spilanthes.

Achenes more or less depressed from the pappus of 2, rarely 3-4 bristles, or absent:—[P—^.

Outer bracts of the involucre almost equal, helianceous; inner bracts separate, almost resedile, the scales of the receptacle; ray-florets fer leaves opposite:—

Achenes almost 4-cornered, without a but crowned by the densely pilose base of coro

476. Guisotia.

Achenes flat, margins lacerate and winged; pappus present, composed of bristles

477. Synedrel.:

Outer bracts of the involucre few, small; bracts connate below, membranous:—

by Style-arms truncate, penicillate or crowned, a short appendage:—

Leaves alternate, pinnatisect; ray-florets ^ tile; achenes narrow, flat, long-ciliate. wi two stiff smooth ultimately recurved awns

478. Glossocardi.

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. Bident

Style-arms ending in a long, shortly baiappendage; ray-florets fertile:—

Achenes long, crowned with 2-3 stiff persisted bristles; leaves mostly radical

481. Glossogyne.

Achenes without awns; leaves mostly cauleine,

482. Oh-ywi
Scales of pappus oblong, chaffy; heads very small

483. Galmsoga.

Scales of pappus feathery, fringed; heads

484. Tridax.

Scales of pappus oblong, chaffy; heads very small

483. Galmsoga.

Scales of pappus feathery, fringed; heads

484. Tridax.

SAnthers not appendaged at the apex; receptacles (in one or two species) not paleaceous; pappus absent or reduced to a raw rim, rarely scaly or short; leaves usually alternate:—[p. 124]

Flower-heads radiate; bracts of the involucre rather broachi,
Pappus of short scales sometimes present

485. Chrysanthemum.

Flower-heads discoid, heterogamous; pappus absent:—
Florets of the circumference very numerous; achenes na* or concave at the top; flower-heads spherical or hemispherical:—

Heads peduncled; bracts of the involucre 1–2-seriate

486. Cotula.

Heads subsessile:—
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 a few

489. Artemis.

Flower-heads Lowered, crowded into dense spherical balls; silvery; leaves and bracts of the involucre spinescent, thistle-like, inserted in the straight areoles of the receptacle.

490. Artemis.

Achenes inserted in the straight areoles of the receptacle.

[p. 180]

Filaments connate, glabrous; pappus-hairs stumpy.

492. Silybum.
Leaves and bracts of the involucre unarmed; free:—[p. 129]
Pappus-hairs 1-seriate, feathery or only a few ones simple; filaments glabrous ..........493. Saussurea
Pappus-hairs many-seriate, subpaleaceous; filaments long.
494. Goëlic

Achenes inserted in the very oblique or quite lateral at the receptacle; leaves and bracts of the involucre spinose:

Bracts of the involucre without any whorl of outer bracts (calycule); pappus many-seriate, bristly except flattened innermost..................495. Yellowstone
Bracts of the involucre with a distinct whorl of leafy bracts at their base; pappus (in our species) warbled.
496. Cardamine
Pappus of scales with sometimes alternating hairs, or pappus of florets blue.................................................497. Clutch
Pappus of hair-like bristles, at least in the central florets heads; florets yellow:—
Pappus-hairs feathery; achenes contracted at both ends, rugose..........................................................498. Picridi
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. Crepis
Achenes compressed or flattened, ovoid-oblong or narrow

500. Lactue:—

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 rugose


Class XX. GYNANDRIA.

©Leaves with reticulate venation; ovary more or less completely 2-celled:—[p. 131]
Genera.

**XX. GYNANDIHA.**

*Perianth*

1-seriate, tubular with inflated base then contracted, hairy limb dilated, obliquely 1-2-lipped; ovary or oonnivent placentas more or less completely bellied; or pevennial. The above characters are applied to *Gynandira*.

*Perianth* 2-seriate, calyx 5-lobed often somewhat 2-lipped; cmoUa

**Gynandira waxy:**—[p. 134]

Pollinia free or those of each cell held together at the base by a viscid appendage, not attached by their bases or by a caucicle to the rostellum:—[p. 133]

*Pollinia* free or those of each cell held together at the base by a viscid appendage, not attached by their bases or by a caucicle to the rostellum:—[p. 133]

§ Pollinia 4:—[p. 132]

Leaves sessile, equitant, fleshy, congested on short, or as, tichous on elongated stems with the vaginal part much noitei than the main leaf; inflorescence terminal; flowers minute, racemose or spicate; column very short, with no appendages i i foot; epiphytes.

Leaves membranous or coriaceous or chartaceous, not equitant, or if, very rarely (*Dendrohium § Aporum)*, & hi a. fleshy, the flowers axillary and the vaginal portion of the lea nearly or quite as long as the main portion and with the column prolonged below into a foot:—

Terrestrial herbs; leaves membranous, rarely *Phy- some times) coriaceous, usually sessile; inflorescence terminal; flowers rather small, in racemes or spikes, co prolonged below as a foot:—

Lip with basal auricles; column very *<*>? *=" T arils.

Lip without basal auricles; column long, with callosities or wings or both; rostellum sometimes doubled.

Epiphytic, occasionally casually epigaeal but never truly terrestrial herbs; leaves chartaceous or coriaceous; more or less prolonged below as a foot:—

II Stems solitary or ccespitose or composed of discrete pseudo-bulbs basally attached to a short rhizome:—[p. 132]
BENGAL PLANTS. [Artificial G]

Flowers from the stems or pseudo-bulbs terminal, axillary, solitary or on few-flowered peduncles or few- or many-flowered racemes, usually large and showy; stems coasptose with leaves chartaceous or coriaceous more than 2, rarely a creeping rhizome distant pseudo-bulbs and 1-2 apical leaves; Pollinia subequal, free. 895. Dendrobium.

Flowers from lateral scapes at base of Pseudobulbs, from rhizome between them, solitary or in umbels or racemes; leaves solitary coriaceous, or binerved, usually from apices of pseudo-bulbs or prolonged rhizome; occasionally the rhizome, less the pseudo-bulbs inconspicuous or absent; Pollinia free or occasionally attached by their bases to a spherical mass of translucent tissue, the inner always smaller than the outer:

- Lateral sepals longer than the dorsal; flowers (in species) umbellate. 896. Cirrhopetalum.
- Lateral and dorsal sepals subequal:— Flowers (in our species) racemose; lateral sepals under lip. 897. Bulbophyllum.

Flowers solitary; sepals spreading. 898. Trianea.

UStems jointed, composed of elongated pseudo-bulbs strung on a woody core; leaves solitary or binary, chartaceous:—[p. 131]. 899. Pholidota.

§Pollinia:—[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 a foot; pollinia subequal, all cohering or cohering by fours to a common membrane. 900. Eulalias.

Terrestrial herbs, pseudo-bulbous or not; leaves infleshy or chartaceous, plicate; inflorescence axillary or scapose. 901. Pachystomum.

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 stolit pseudo-stem; flowers contemporaneous with leaves:— Sepals and petals free; lip adnate to base of long column, spurred. 902. Phajrantha.

Sepals connate with long foot of short column; lip saccate mentum; lip mobile. 903. Acanthephippis.
the Genera 1

\[\text{Pollinia} \text{ attached sin} \]

rarely, \( \text{or in pairs or by fours through one or,} \)
two caudicles to a stigmatic gland :—[p. 131]

Anther terminal:—[p. 134]

\( \text{Pollinia} 8, \text{attached by fours to a granular caudicle; terrestrial} \)

\( \text{bas; leaves chartaceous, plicate} \)

904. \text{Calanthe.}

Terrestrial herbs, with pseudo-bulbous stems; flowers in
Plechuncled racemes; leaves chartaceous or membranous,
plicate :—

\( \text{L} \text{P distinctly 3-lobed, saccate or spurred at base; inflorescence strict} \)

905. \text{Eulophia.}

\( \text{L} \text{P obscurely 3-lobed, wide ventricose at base but not} \)

\( \text{spurred; inflorescence at first decurved} \)

90G. \text{Geodorum.}

Epiphytic herbs —

Stem pseudo-bulbous; leaf solitary...907. \text{Thecostele.}

Stems very short, leaves closely clustered, flat, fleshy
and pendulous; lip spurred, with forked appendages on
its disk 908. \text{Doritis.}

\( \text{L} \text{P} \text{ more or less elongated; leaves coriaceous and} \text{fl} \text{P or fleshy and terete} :—

\( \text{L} \text{ip not spurred; leaves terete} \)

909. \text{Luisia.}

Lip spurred, adnate to the column or to its foot:—

Column prolonged into a long foot which forms an

\( \text{elongated spur with no callus or septum within} :—

\( \text{Lip jointed to the foot} \)

910. \text{Ornitharium.}

\( \text{Lip not jointed to the foot} \)

911. \text{iE ridges.}

Column with little or no foot :—

\( \text{OSpur with neither calli nor septum within} \)

[p. 134]

\( \text{Spur compressed, very deep, pubescent at the} \text{mouth} ; \text{side-lobes none} \)

912. \text{Rynchostylis.}

\( \text{Spur not compressed, long narrowly cylindric,} \text{or wide funnel-shaped or short saccate, rarely} \)

\( \text{(one} \text{Vanda}) \text{reduced to a gibbous swelling} \text{and then the leaves flat} :—

\( \text{Side-lobes of lip usually large; spur wide} \text{infundibuliform, glabrous at the mouth} ; \text{if side-lobes of lip small then the spur also} \)

\( \text{subobsolete; flowers large; caudicle of} \)

\( \text{pollinia very broad} \)

913. \text{Yanda.}

\( \text{Side-lobes of lip small or none; mouth naked or fimbriate; spur narrow cylindric or short} \)

\( \text{K} \)
BENGAL PLANTS.

Of

134.

wide saccate; flowers small; caudicle pollinia very narrow...914. Saccolabium
©Spur within partially or completely occluded by calli:—[p. 133]
Spur occluded by a dorsal scale or by cam the anterior and posterior walls but with septum...915. Clcistostom
Spur within partially occluded by calli* & divided by a vertical antero-posterior septum into two lateral chambers...91G. Sarcanth

** 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 in a 5-toothed 2-labiate tube...919. Didymopis
Green herbs with sepals and petals free; leaf solitary... the flower from a separate tuber, rarely from the same tuber and contemporaneous...920. Poj- nia

Anther posticous, vertical but inverted; pollinia 2, or 4 in 2 attached occasionally directly but usually by one or two dicles 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. Ti- opioidia
Lip with a long claw, but neither spurred or saccate

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 always narrow...924. Spiranthes-

Stigmas 2, lateral, distant; pollinia 2, each 2-partite; sessile; leaves flat, membranous:—
XXI.—MONCECIA.

135. Yrydagzynea. B

*Anthers 2 sg of ilP. saccate but not spurred ............... 926. Zeuxine.

\[ \begin{align*}
\text{Parasite el B} & \quad \text{attached with or without caudicles to two c and s; leaves flat, membranous; terrestrial herbs [p. 131]}
\end{align*} \]

927. Habenaria.

\[ \begin{align*}
\text{Class XXI. MONGECIA.}
\end{align*} \]

\[ \begin{align*}
\text{Flower, f. \quad vScular \quad emitting odd; anther 2 locular,} \\
\text{Flowers, oith 1-celled, t in perfect cell.}
\end{align*} \]

\[ \begin{align*}
\text{Leaves sessile on the column always discrete, the outer cell empty; pollinia attached with or without caudicles to two c and s; leaves flat, membranous; terrestrial herbs [p. 131]}
\end{align*} \]

927. Habenaria.

\[ \begin{align*}
\text{Minute an} & \quad \text{proper \quad 11 lenticular or granular floating aquatic herbles with little}
\text{organisation; flowers without perianth:—}
\text{margin of the flattened frond; fronds, stamens 1 or 2}
\text{1013. Lemma.}
\end{align*} \]

\[ \begin{align*}
\text{Flower, f. \quad vScular \quad emitting odd; anther 2 locular,} \\
\text{Flowers, oith 1-celled, t in perfect cell.}
\end{align*} \]

\[ \begin{align*}
\text{Per surface of the granular frond; rootless; anthers}
\text{S0frLeafA} 1014, \text{Woflia.}
\end{align*} \]

\[ \begin{align*}
\text{Well-developed fibro-vascular system:—}
\text{leaves racemose; flowers on a usually branched spadix;}
\text{at A6 with a usually elongated woody stem; trees or}
\text{shrubs (p. 136); leaves twice or partially once pinnatisect:—}
\text{Padix interfoliar but followed progressively down-}
\text{stramens many, free}
\end{align*} \]

\[ \begin{align*}
\text{leaves in terfoliar, flowering while the leaf in the axil of which}
\text{Produced is still green; leaves completely pinnatisect, the}
\text{segments with reduplicate sides:—[p. 133]}
\text{leaf segments oblong irregularly toothed; base cuneate}
\text{costate; nerves flabellate; fruit small; stamens 6, free}
\end{align*} \]

987. Wallichia.

\[ \begin{align*}
\text{Cocoa.}
\end{align*} \]
J. Spadix infrafoliar, flowering after the fall of the leaf in the 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 sides 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

Perianth absent; spadix unbranched with males above and females below on different portions; herbs:—[p. 135]

Water or marsh plants; leaves entire; barren appendages

Floating stemless aquatic herbs; leaves sessile obovate-concave in a rosette-like tuft; base stoloniferous; stamens nionade

Submerged aquatic or palustrine herbs; leaves tunicae 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 pinnatifid, leaves entire (Typhonium sometimes) not peltate; c® narrower than anther-cells:—[p. 137]

Spadix with a barren terminal appendage:—

Flowers and leaves present together; leaves undivided or more or less 3-lobed or pedatipartite; males and females remote; neuters present above the females and some below the males; ovules orthotropous; stamens 1 or 2-3, free .................. 1000. Typhonium.

Flowers appearing before the leaves:—

Males and females remote; neuters present above females; leaves pedatipartite; edges of the spathe connate below; ovules orthotropous; stamens 2, free

Males and females contiguous or nearly so; leaves 3-sect, segments pinnatifid; edges of spathe ovules anatropous; stamens 2-4, free

Spadix without a barren terminal appendage; males and females 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, free

1002. Amorphophallus.
Genera, XXL—MONCEIA.

§ Leaves and scape arising from a short caudex prolonging a tuber-like hypogeeal rhizome or if arising direct from a g*al corm the leaves peltate and undivided; connecty than the anther-cells; flowers and leaves present togetne.

[p. 136]

Leaves peltate; stamens monadelphous:

Spadix with a barren appendage; not adnate at its thespathe:—

Ovules few, basal:—

Ovules many, parietal:—

Spadix without an appendage; ovules many parietal:—

Spadix quite free from the spathe:—

Leaves not peltate; spadix without a barren appendage:

3sta mens 2-4, free:—

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:—

Ovary inferior, carpels connate; perianth 2-seriate, 3-floating calycine, 3 inner petaloid; stamens—J^ flowers Aquatics with conspicuous Ovary superior:

Carpels 2 or more, free:—

Tufted aquatics with large radical leaves; flowers y

Creeping submerged aquatics with m each series; carpels many; seeds 0 or more, free:

Creeping submerged aquatics with T* *J* 2-9>, leaves; flowers minute, axillary, perianth 0, «P usually only 4 ripening; seeds pe

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 ^ female single hyaline or 0; carpel solitary:

Flowers in terminal spikes or spikelets or heads; radical tufted or distichous or 3-stichous along
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 sub e spathe; 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 rafted rarely floating aquatics.

Flowers arranged in spikelets in the axils of bracts; leaves sheathing at the base; ovary 1-celled.

Flowers in axil of a glume; leaves 3-stichous, closed in front, ligule 0; fruit a minute embryo inside albumen; style simple, stigmas 2-locular.

Ovary and fruit enclosed in a bottle-shaped utricle with an entire or notched or shortly slit niotha.

Stamens 2 or 3, free.

Glumes entire with one small median veil.

Glumes 3-fid, with 5-7 strong veins; stamen 1 or 2, free.

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.

Stamens in continuous spikes, racemes or panicles, glumes herbaceous or membranous, the lower smallest 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, niuocrine; stamens 3:—

Branches of the panicle produced beyond the uppermost spikelets; glume 1 minute, hyaline; spikelets narrow..................1049. Chamaeraphis.

Branches of the panicle not produced beyond the uppermost spikelets; glume 1 distinct; spikelets subglobose..........................1051. Isachne.

Spikelets in pairs, one sessile the other pedicelli, 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 1 of sessile spikelet inflexed; stamens 3......1075. Ischaemum.

Margin of glume 1 of sessile spikelet not inflexed; stamens 1-2... 1079. Lophopogon.

Lower floret of all the spikelets empty:

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 cylindro spongy rachis, the grain exposed ....1084. Zea.

Fruiting spikelets lax, rachis slender, grain concealed:—

Fruiting spikelet with glume 1 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 Myrophyllum and Ceratophyllum terrestrial:—[p. 137]
Aquatic plants with submerged or floating stems, whorled:—
Ovary inferior, 4- or 2-celled; stamens 4...318. Myrophyllum.
Ovary superior; 1-celled; stamens 20-30...880. Ceratophyllum.
Terrestrial plants:—
Climbers provided with tendrils:—[p. 141]
1-celled anthers:—[p. 141]
**Anthers 2-celled; ovules horizontal or very rarely lous; female flowers usually solitary never panicled, never divided into distinct leaflets:—[p. 141]
§§Corolla rotate or, if campanulate, divided, rim quite to the base into 5 free petals:—[p. 141] Petals fimbriate at their margins; anthers coes.
Fruit dry, endocarp fibrous, opening 3...364. Benincasa.
Fruit soft, endocarp fleshy, indehisce male and female flowers alike, stamens 3...365. Benincasa.
flowers with usually a large enveloping bract; tendrils simple; stamens 2-3

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.*

Anther-cells straight, or if curved (*linonia*) not conuplicate nor sigmoid; stamens 3; anthers free:— [p. 140]
Male and female pedicels alike 1-flowered, clustered:—
Tendrils 2-fid ....................................... 373. *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.*
Ovary superior; anthers 2-celled; fruit capsular Lp- [140] 358. *Modecca.*

*Erect herbs, shrubs, or trees, or if climbing not provided with tendrils:—[p. 140]*

§Leaves compound:—[p. 142]
*Erect tall trees; leaves not pellucid gland-dotted:—[p. 142]
*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-ovuled ............ 875. *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. Sterculia
If Prickly climbing or sarmentose shrubs; leaves 3-foliolate, casually 1-foliolate; leaflets pellucid gland-dotted; stamens 2-5 [p. 141] .................. 434. Toddalia

^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 at base of calyx with as many alternate clavate glandular ovary 1-celled, ovule 1, pendulous; fruit a capsule crowned by the accrescent spathulate calyx-lobes

330. Gyrocarpus

Herbs:—
Stamens many, free or connate; ovary 2-4-celled, ovules many on axial placentas; petals 1-seriate or sub-2-seriate, segments 4 or 5; capsule or succulent; stem and leaves succulent

378. Begonia.
Stamens 5, filaments connate; ovary 1-celled, ovule 1 erect; corolla tubular 5-toothed, in female flower 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. Viscum—
Stamen 1; marsh-weeds .................. 318*. Callistria

Ovary superior, sometimes unclosed and with ovules naked:—
•Ovary present as a closed cavity:—[p. 151]	Ovary 4-more-locular; flowers not in catkins:—[P. 143]
I Petals 0, or if present, free:—[p. 143]	Ovary 5-locular; perianth 1-serial; petals 0; stamens connate in a column with anthers near its apex; leaves alternate:—	Ovary with cells 2- or more-ovuled:—	Fruit of 2-valved cocci .................. 817. Glochidia
Fruit of ripe carpels opening like follicles

105. Sterculia—
Ovary with cells 1-ovuled; carpels in fruit indehiscent, subsamaroid .............. 106. Heritiera.
Ovary 4-5-locular; perianth 2-serial; 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)
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:—
TOvary 2-3-, rarely more-loculed; ovules 2 or 1
in each loculus:—[p. 149]
	Flowers aggregate-monoecious, many males (con-
sisting of each a solitary pedicelled stamen)
surrounding a single central 3-carpelled pedi-
celled female, all enclosed in a pseudo-calycone.
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, inflores-
cence always lateral or axillary:—[p. 145]
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Flowers in small axillary cymes; sepals 5, imbricate; petals 5, each 2-fid; stamens free; ovary 2-3-celled, fruit an indehiscent drupe; shrubs or small trees

168. Chailleletia-

Flowers not cymose:—

JMale flowers in axillary fascicles, 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:

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 fruit dehiscent...

816. Actepn-

Corolla absent in both sexes; sepals imbricate:

Styles in the female confluent in a long or short column or cone fain toothed at the apex; calyx 4-6-lobed or toothed; disk 0 in either sex; anthers 3-8 connate in an ellipsoid or oblong sessile column with 3-8 cells; trees or shrubs

817. Glochidion-

Styles separate, or if partly connate the style-arms and stigmas in the stamens usually connate (see Phyllanthus § Cicca):—

Disk 0 in either sex, or if present in Agyneia then only in 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.*

Disk present in both sexes, or if absent (*Phyllanthus* § *Emblica*) 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]

FFJowers 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
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panicles; stamens erect; leaves
tately lobed:—
Calyx imbricate in bud, regularly
d carpel
5-lobed; fruit dry, capsular, each
2-valved:—
Stamens 10, united in 2 series to
the lobes of a hypogynous
petals none in either sex; shrubs
or
trees.........................828. U&
Stamens many, the outer 5 in
series opposite the petals, the rest
in a column in centre of petals 5; shrubs or small trees
829. Jatropha-
Calyx irregularly valvate, rupturing
into 2-3-lobes; fruit a drupe;
8-20, the outer 5 in a series
petals, the rest free in the centre of
flower; trees ............830. Aleuflit^:
Flowers in androgy nous spikes
stamens inflexed in bud with
reversed, many, inserted on the
receptacle; fruit dry, capsular, each
2-valved; leaves pennis erved or 3-
nerved from base; trees or shrubs
831. Croton.
II Flowers in axillary clusters,
racemes or panicles or if terminal
with petals absent at least from
flower and usually from both with
sometimes, Ricimis) the stamens indefinite
Sebastiana) with stamens definite
seriate:—[p. 145]
§Petals present in male flower; filai»e«J
straight; ovary 3-celled; fruit capsule
[p. 147]
Sepals imbricate; disk developed &
both sexes; stamens 15-30, of
shrub s or trees; flowers usually
1-sexual racemes, rarely a female
base of male raceme; males and1,
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 pedicelled 

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, crustaceous. 

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 imbricate:—[p. 149]

†Styles distinct, usually long, entire, 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, or5-10...838. **Claoxylon.**

Styles filiform, long, laciniate or fimbriate; male flowers small ebractente, females at base of male
spikes or in separate spikes or in separate spiky spikes usually with a large bract disk; stamens 8 to many

839. *Acalypha*

*Anther-cells globose, laterally attached to the connective, stamens many;

shrubs:—[p. 147]

Anther-cells 2; flowers minute in axillary or terminal simple or pithy spikes or racemes, capsular; disk soiflet present in female flower

841. *Mallow*

Anthers 3-4-locellate; disk 0; style long 2-fid; trees or shrubs; male flowers in axillary racemes, terminal subpaniculate racemes; upper male crowded, lower female; tree-like annual herb with palmate serrate leaves; fruit a capsule

842. *Cleidioda*

Filaments connate in bundles, branched; disk 0; flowers & terminal subpaniculate racemes upper male crowded, Terminal subpaniculate racemes; male flowers in axillary racemes, terminal subpaniculate racemes; upper male crowded, lower female; tree-like annual herb with palmate serrate leaves; fruit a capsule

845. *Ricci*

Styles connate; twining herbs with axillary androgyinous spikes; stamens 1-seriate; disk 0 or obscure; fruit a capsule:—

847. *Cnesmone.*

Styles connate below read above; male calyx 3-5-partite; stamens 1-3; seeds with a fleshy coat

Cesmone.
XXI.—MONCEGIA.

• 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 panicled 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 andro-gynous 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.
Ovary 1-locular; ovule solitary:
§§ Leaves without stipules; alternate:
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 herba-ceous 3-5 partite, without bract or bracteoles; of female 0. 782. Atriplex.
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Slaves stipulate:—[p. 149]

Wamens 6; stipules ochreate

... 788. Ruis. ex.
stamens 5 or fewer; stipules never ochreate :

Tt^ants with watery juice :—[p. 150]

Anthers in bud erect; style 2-fid; oVuJ:

Pendulous; m a l e sepa l s unduplicate-vft v a t e ; 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 <v4i:
or linear, hooked, with sometii*es
2 basal arms .......:....856. FJeury*

Ov ary straight; stigma subtil^ Papillose..............857. Girardiff**

^aves a n d s t e m s w i t h n0 stipiit* .

nairs:—

Female perianth 3-5-partite or obs-.
" lete » " stigma penicillate; flowers 1»
^ames or clustered on a fleshy f^n
ceptacle:—

Leaves opposite; flowers cjmoe
of capitellate ............855. Pirea
leaves alternate; flowers on » fleshy receptacle; female perian^
vey small or none

859. Elatostem*

female perianth tubular, shortly

toothed or subentire, enclosing *be
achene ;—

bruiting perianth dry, membra
n o us; stigma filiform :—

. Shrubs; stigma persistent

860. Bcehmeria-

He rbs; stigmajointed, deciduo

PouzoUi**

fruiting perianth more or 1^8
flesv. 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 perianth, 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. **Thuya.**
Class XXII. DKECIA.

Flowers arranged on spadices subtended by a spathe or spathaceous 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 adpressed prickly palms:
  - Spathes tubular, persisting.
  - Spathes cymbiform or open, deciduous.

Perianth 0:

- Trees or shrubs; leaves long, narrow, coriaceous, spiral, margins and keel; spadices involved in several spathaceous fruit a globose or oblong mass of angular drupes.
- 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 blast distinct basal sheaths:
  - Ovary inferior; aquatic species with flowers enclosed in spathe or spadix:
    - Stems branching, leafy; spathes small, sessile; perianth.
    - Leaves whorled; ovules anatropous.
    - Leaves scattered; ovules orthotropous.
  - Stems 0, or with stolons only; leaves tufted, radical, spathes on long scapes:
    - Perianth single.
    - Perianth double.

- Ovary superior; perianth single or irregular or 0:

Submerged creeping aquatic plants with minute axillary flowers:

Erect species; leaves with a long stem-clasping sheath:

- Leaves 3-stichous; sheaths closed in front, not ligulate; glumes without palee.
Genera. XXII.-DIWCA.

Leaves 2-stichous; sheaths open in front, ligulate behind; Bhruba, glumes paleate [p. 152]..................1046. Spímitex; leaves with netted reticulation, even when the main-nerves parallel; plants climbing with the aid of tendrils — [p. 154]...; Ovary inferior :—[p. 154]

Anthers 2-celled; female flowers usually solitary; leaves entire or 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. Hodgaoma.

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. Lagenana.

Calyx-tube of male flower short, with 2-3 scales at its base; the male flowers with usually an enveloping bract; tendrils simple.366 T 1 F vāv Corolla campanulate, not divided much more than half-way down.........................360. Cephalandra.

Anther-cells straight:—

Flowers large, deep yellow; male racemes short

371. Thadianthra.

Rowers 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, many, racemed or panicled; leaves pedately divided into leaflets

377. Gynostemma.
Ovary superior:—[p. 153]
Leaves twice 3-nate; perianth of 4 sepals and 4 petals; «W*J 8; fruit an inflated capsule...190. Cardiosper*
Leaves simple, 3-5-nerved and reticulate between the perianth 2-seriate, each series 3-merous; stamens 6;... 961. Sangu-
Plants stems or, if climbing, not provided with tendrils.

Ovary inferior:—
Ovary 3-celled; ovules in each cell 2, superposed; dimb» rarely erect herbs or shrubs; perianth segments 0, stamens 3 or 6; leaves simple or compound...958. Dios*»*
Ovary 1-celled; ovule solitary; erect species with 5-***

Leaves alternate:—

Trees with unarmed simple leaves; flowers not in be

Petals imbricate; style 1; drupe ultimately superior

Petals valvate; styles 3; drupe half-inferior or inferior

Leaves opposite, flat and thick, or reduced to scales

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 ..........800. Ac*inodapb*»-
Flowers umbellate, the umbels involucrate; perianth-segn* ^ sometimes 6, sometimes 4, sometimes small or obsolete

Anther-cells *Perianth 1 ep* by Chinks o1 PO'B. ^ver by valves:

*Leaves compound; trees or shrubs i-fp- 155]
*Stamens united in a tube ................................15 8. Am<xy^y^8:

Ovary 1-celled; stamens 8-10 209. Odina.
Ovary 2-3-celled; stamens 8 *-1...............
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
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
connette 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:—
Carpels 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
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...

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JPetals imbricate; climbers:—[p. 157

Stamens free; perianth-segments free;

3 or more:—

Petals 2; sepals 8; anthers 4...31.

Petals 6:—

Sepals 9-12; anthers 6, opening obliquely

30. Hsematocarp*.

Sepals 6:—

Anthers 9-26.

26. Pycnarrhen

Anthers 6:—

Carpels in male flowers 0:

Stamens with thickened...3; styles forked...

27. Tinospora.

Stamens with subglobose...styles cylindric...

Carpels in male flower 3, rudimentary; stamens subcylindric; anthers dehiscing vertically; carpels...

29. Tili*.

Stamens connate:

Anthers 6; perianth-segments all free:

Carpels 3, accompanied by staminodes:

Petals 6, sepals 6; female staminodes

22. Parab*.

Petals 0, sepals 0; female staminodes

23. Anamirt*.

Carpel solitary, female staminodes 0; 6-10 in male, 3-5 in female; petals always

24. Stephania.

Anthers 4; male petals 4 connate, sepals

female petal 1, sepal 1...

25. CissampC.

Carpels 3 or more, connate in a syncarpous ovary in trees or erect shrubs; perianth rarely 3-merous:

[p. 155]

irOvary 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:—

Sepals free, imbricate .... 59. Taraktogenos.
Sepals connate, subvalvate 60. Chaulmoogra.

Stamens 10, adnate to the gamopetalous corolla, 5 with filaments alternate with lobes, 5 opposite lobes without filaments .......... 359. Carica.

Perianth of one whorl (calyx) only, or absent:— [p. 154]

Tall trees with green leafless jointed branchlets with small scales whorled at the joints; perianth-segments \( \frac{1}{2} \) 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 opposite; ovules naked; trees ............... 882. Podocarpus.

Perianth present:—

Leaves opposite; flowers whorled on simple or branching 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.
BENGAL PLANTS.

JShrubs: flowers in axillary spines, 3-celled, ovules 1 in each cell [p. 157]

§Stamens free:—[p. 157]

Ovary 2- or more-celled:—[p. 159]

Leaves compound:

Leaves even-pinnate:—195. 
Leaves 3-foliolate:—813.*
Leaves simple:

Sepals imbricate:

Cells of the ovary each 1-ovuled; stamen 

Cells of the ovary each 2-ovuled:

Stamens many; sepals ciliate; celled; fruit a berry:—57. 
Stamens definite, or if many (W sometimes) the sepals not ciliate:—

Fruit a loculicidal capsule

198. Do—

Fruit indehiscent or tardily de his cent:—

Male flowers in axillary spikes, or panicles:

Seeds not arillate........826. 
Seeds arillate........827. 

Male flowers in axillary fascicles:

Fruit a drupe; trees:

Stamens 2-4; drupe 1-celled
Stamens 8 or more; drupe 2-celled

Stamens 8 or more; drupe 2-celled

Fruit a berry with 6 cocci enclose an indehiscent epicarp

818. Fluegg

Sepals valvate, at least in the male, or open bud; ovules 1 in each cell of ovary:

Calyx of male unequally 4-toothed, of 5-toothed closed in bud; flowers small, in simple spikes or racemes, all axillary; 

4-celled.......................837. Endosperm

Calyx of male partite to the base, closed in bud:

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**

Perianth calycine, 1-seriate, regular or irregular:

Plants with watery juice:

Anthers in bud erect; style 2-M; ovule pendulous:

Trees with pinninerved leaves; ovule anatropous; male sepals induplicate valvate..................854. **Trema**.

Herbs or annual undershrubs with digitate leaves; ovule obcampylotropous; male sepals imbricate...855. **Cannab**

Anthers in bud reversed; stamens inflexed; style undivided or 0; ovule erect, orthotropous:

Female perianth 3-5-partite, or obsolete; stigma penicillate; flowers in cymes, or clustered on a fleshy receptacle:

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; stigma filiform........ 860. **Bechmeria**.

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 inflexed; 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.

Having Pol

Class XXIV. CRYPTOAMIA.

More or less Submerged or floating herbs:—[p 162]

Plants growing at sides or in depths of pools or sluggish streams:—

Rolle f.pinnatisect, dimorphic; sori on veins running longitudinally down the fertile pinnate pearly parallel to both midrib and edge

1134. Ceratopteris.
Fronds longpetioled, with 4 terminal obcordate to cuneate gilda.
sori in closed conceptacles ..................... 155. mpms three.

Plants floating on the surface of ponds and rice-field swa
[p. 161]

Fronds entire, with complicated anastomosing venation.

Fronds small, deeply lobed, each lobe 1-nerved only ...

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 
making a terminal cone-like fructification; erect in 

1150.

Stem not articulate, simple or dichotomously branched;
whorled; circinate in bud; sori in axils of bracts or leave
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 ...J Opt

Sporangia all of one sort with many small spores; leave
always uniform and usually multifarious:—

Leaves many, crowded; sporangia orbicular, co
1-celled, 2-valved .................. 1157. Spreads
Leaves few, distant, rudimentary; sporangia turbinate, /
3-valved ............................... 1158, P.S.

Leaves (fronds) very large in proportion to the stem or rootstoc
never articulate:—

Fronds erect in bud, divided more or less deeply into a ferti e
barren portion:—

Sterile portion of frond simple or, rarely, palmately lobed

1151. Ophioglossum

Sterile portion of frond digitate .......... 1152. Helminthostac

Fronds circinate in bud:—

Sporangia opening by a lateral slit or an apical pore but wi
any ring; sori dorsal or marginal:—

Sporangia sessile, contiguous but discrete, arranged in
near the edge of the pinnae; fronds 2-pinnate, veins free

1149. Angioptem hollow

Sporangia concrete in raised circular dorsal masses with
centre; 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:—
Bing 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
1126. Alsophila.

Herbs:—
tSori furnished with an indusium:—[p. 164]
Fronds delicately membranous, transparent; indusium apical on a vein, tubular
1127. 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
1129. L
Indusium opening inwardly towards midrib of frond
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
1130. Cheilanthes
Sori on a slender filiform receptacle, ugle of the indusium, connecting several to many veins, linear and continuous:—
Segments of fronds very small and na
the receptacle connecting the apices
veins ..............................1132. Onych*
Segments of fronds conspicuous;
tacle connecting the apices many
1133. *

JSori remote from margin of frond:—[p. 163]
Indusium linear or oblong :
Fronds simple or variously once or op
pinnate:
Indusium membranous, parallel and e
and opening towards midrib 1135. tJe
Indusium divergent from midrib, sing
opening towards midrib, or double and op
ing both towards midrib and margin of e

1136. Asplem<

Fronds palmately flabellate 1137. Actinoptt
Indusium reniform:
Pinnae, mostly divided, not articulate nor w
dotted above ......................1138. Nephro
Pinnae always simple, articulate at base, *
white cretaceous dots above .1139.

Sori without an indusium :—[p. 163]
Sori on back of lobes confined to the veins :
Sori round or very slightly oblong
1140. Polyp
Sori linear:
Veins not all soriferous:
Sori distributed generally on soriferous veins --
Sori on the main-<teins only

1141. Gymnogram
Sori on the transverse connecting vein
only.................................1142. Menisci^J
Sori circumscribed to a marginal or submf1^A
line parallel to midrib and margin of fronds ^
Fronds all similar, grassy......1143. Yittan»-
Fronds dimorphic......1144. Drymoglossum
Veins freely anastomosing, all soriferous

1145. Hem

Son not confined to the veins, but spread over
whole under-surface of the frond... 1146,
I. SUMMARY OF THE NATURAL SYSTEM.

SYNOPSIS OF THE CHIEF SUBDIVISIONS.

Plants bearing flowers with stamens or pistils or both; pistils bearing 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 .................................................. ANGIOSPERMÆ.

First leaves of embryo solitary or alternate; framework of leaves of 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 around 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 ............................................. COROLLIFLÓRÆ 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, ............................................. CALYCIFLÓRÆ II.

Stamens hypogynous arising apart from calyx direct from the receptacle or from a disk that crowns the pedicel; segments of calyx usually free ............................................. THALAMIFLÓRÆ I.

Corolla almost always and calyx often absent; flowers generally bisexual, x, y, a, f, j, n, c, o, m, PINCÔMÈLE IV.

Pistils without a stigma; ovules borne on an ovary composed of an ovary and carpel; stamens 2 opposite or more than 2 and whorled; style usually united ............................................. TETRAPODÆ III.

Perianth almost always absent; first leaves of embryo opposite, segments of bundles round a central pith ............................................. GYMNOSPERMÆ: v.

Pistils open; ovules borne on an ovary composed of an ovary and carpel; stamens 2 opposite or more than 2 and whorled; style usually united ............................................. TETRAPODÆ III.

Perianth almost always absent; first leaves of embryo opposite, segments of bundles round a central pith ............................................. GYMNOSPERMÆ: v.

Corolla almost always and calyx often absent; flowers generally bisexual, x, y, a, f, j, n, c, o, m, PINCÔMÈLE IV.

Pistils without a stigma; ovules borne on an ovary composed of an ovary and carpel; stamens 2 opposite or more than 2 and whorled; style usually united ............................................. TETRAPODÆ III.

Perianth almost always absent; first leaves of embryo opposite, segments of bundles round a central pith ............................................. GYMNOSPERMÆ: v.

Corolla almost always and calyx often absent; flowers generally bisexual, x, y, a, f, j, n, c, o, m, PINCÔMÈLE IV.

Pistils without a stigma; ovules borne on an ovary composed of an ovary and carpel; stamens 2 opposite or more than 2 and whorled; style usually united ............................................. TETRAPODÆ III.

Perianth almost always absent; first leaves of embryo opposite, segments of bundles round a central pith ............................................. GYMNOSPERMÆ: v.

Corolla almost always and calyx often absent; flowers generally bisexual, x, y, a, f, j, n, c, o, m, PINCÔMÈLE IV.
BENGAL PLANTS.

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 at the apex of the stem bearing sporangia on their inner surfaces. *Equisetum.*

Leaves not in whorls, the fertile ones flat, with the spirals confined to the upper surfaces. *Rhizoclonium.*

Leaves large in proportion to the stem, the fertile ones not confined to a particular region:—

Leaves bearing sporangia on their upper surfaces. *Pteridium.*

Leaves bearing sporangia on their lower surfaces. *Filix.*

PHANEBOGAMIA.—Exceptions mainly teratological; certain flowers have pistil, less often ovules, etc., but stigma present, and carpels free, owing to ovaries not developing. *Musa.*

ANISOSPERMATHEAE.—Carpels open and young seeds naked, in some species (*Strychnos colorata*), but stigma present, and carpels united into ova. *Euphorbia.*

MONOCOTYLEDONES.—Parallel-divergent veins in many *Scitamineae.*

DICOTYLEDONES.—Parallel-divergent veins in leaves of some *Guttiferae.*

PETALIA.—Petals more or less united at base in *Leguminosae.*

days in their

Calyciflorae.—Corolla may be absent in *Oleaceae* (Oleaceae); petals may be absent in some *Leguminosae.*

Corolla distinct in *Loranthus.*

Incompletes.—Petals occasionally present in *Euphorbiaceae.*

Selaginella.—In *Equisetum, Lycopodium,* and *Homestronium* species of the fertile organs are aggregated in a conical mass simulating an inflorescence. Certain *Filices* also (*Ophiogloaum, Helminthostachya, Acrothichum, &c.), the limits of sporangia to definite foids give rise to a similar appearance.
SYNOPSIS OF THE NATURAL ORDERS.

I. THALAMIFLORS:

*Sepals united, in bud; if valvate (Ranunculaceae: Clematis,
Naravelia) then like stamens in terrestrial climbers with opposite cirrhiferous leaves;
if many (Eanunculaceae: Naravelia) then like stamens in terrestrial climbers with opposite cirrhiferous leaves;
leaves opposite, stamens many, and
stamens in some (Guttiferae: Portulacaceae: Ochrocarpus) then trees
Sepals 2 with petals 4 or 5; ovary 1-celled with free central placenta; leaves alternate; sap watery; stamens
pollen and the 2-merous, unlike green sepals; herbs:

Petals opposite or 3-nate leathery leaves and resinous juice:
the several whorls or in a continuous spiral with
sepals; aquatic plants with a submerged rootstock
BENGAL PLANTS. [Synopsis of the

Sepals deciduous:—

Carpels when ripe usually quite free; if partially cohering, the ovules arising from the ventral sutures of closed carpels. I. Ranunculaceae

Carpels coherent in a 1-locular ovary with parietal or subdorsal; disk 0; carpels more than 1-ovuled

II. Diellia

Pistil of 1-many carpels distinct or cohering in the ovary of the flowers; styles quite free throughout, or subdorsal; disk 0; carpels more than 1-ovuled

XXXII. Ochnaceae

Stamens attached to the bases of and deciduous villi of the petals. XXI. Ternstrémia

Leaves opposite:—

Flowers almost always 1-sexual or polygamous, 4-merous; if 5-merous with resinous juice; leaves coriaceous no gland-dotted. XX. Guttiferaceae

Flowers hermaphrodite, 5-merous; leaves herbaceous gland-dotted. XIX. Hypericiaceae

JStamens definite, 10 or fewer:—[p. 167]

Flowers usually 3-merous, if 2-merous (some Menispermaceae) then 1-sexual; carpels free or solitary; stamens 6 free equal opposite the petals; leaves alternate:—

Flowers minute 1.5exuad, scandent herbs or shrubs; seeds usually reniform; carpels 3. V. Menispermaceae

Flowers (in our species) hermaphrodite; erect shrubs; anther dehiscing by 2 valves; carpel solitary VI. Berberidaceae

Flowers 5-7, (several as in FujiUBiAc* only 2):—m I with stamens 6; placentas 2 parietal, fruit a capsule
Orders. \( L \)—THALAMIFLORJZ.

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 \<OLYGALACKE 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. Violaceae.

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 \( \_X \_V I I \_ \) Tamariscine*.

Ovary 2- or more-celled; if 1-celled (POLYGALACE:E XANTHO-

phyllum, 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*: \( O x a l i d e c e \) and \( I w p a t i e m \)) then either with regular flowers and alternate digitate or pinnate leaves (\( O z a l i s, B i o p h y t u m, A v e r r h o a ) \) or with opposite or alternate simple leaves and irregular flowers.

*Seeds pendulous:—\( \_p \_1 7 0 \_ J \) XIV.

\ttFlowers usually anisomerous (sepals 5, stamens 8, subisomerous in \( S a l o m o n i a \)) filaments connate; sheath usually adnate to petals; \( s e p a l s \) and petals generally irregular; ovary 1-2-locular; leaves alternate; disk 0 \( \_p \_1 7 0 f \_ . \_ . \_ \_ \) XIV.
BENGAL PLANTS.  

[Synopsis of]

ft. Flowers isomerous; disk usually present:— [p. 169]

Leaves compound opposite; stamens quite
stamens always 10 . . . . . XXVIII. ZygophyllaC®^.  

Leaves simple, or if compound alternate; sta
more or less united :—

Ovules in each carpel 2 collateral; cells of caps
fruit 2-chambered, chambers each 1-seeded;
always alternate simple; stamens always 5; p
and sepals always regular . . . . XXVI. 

Ovules in each carpel 2 with stamens 10 regular perianth; if more than two with reg
perianth and stamens 10 and compound alter*
leaves, or irregular perianth stamens 5 with con
anthers and simple leaves .XXIX. Ge

**Seeds erect; flowers isomerous or anisomerous; le
usually alternate even-pinnate rarely simple or digi
compound, more rarely opposite and odd-pinnate;
often arillate [p. 169] . . . . . . . . . . . . . . . . . XLI. Sapindace*

f Sepals more or less united at the base:—[p. 167]

Stamens indefinite; petals contorted; calyx-lobes often enlarg
fruit; trees or climbing shrubs with resinous sap; leaves altern
simple not gland-dotted; calyx-lobes and petals 5

XXII. Dipterocarpei*

Stamens definite (12 or fewer); if indefinite (Rutace^E: Citru
Mgle) the leaves gland-dotted:—

Leaves pellucidly gland-dotted; simple or compound, opposite
alternate; calyx-lobes and petals 4-5; stamens inserted outsi
the prominent disk ; petals often valvate . . . . XXX. Rutcu

Leaves not gland-dotted:—

Leaves opposite simple; calyx-lobes and petals 5, stamens 10
disk obscure ; ovary 3-celled, cells 1-ovuled

XXVII. Malpighiacae

Leaves alternate; if opposite (Celastrine;E: Salacia, Hippo-
cratea) the disk large, or (Olaciney;E: lodes) the ovary 1-celled :-
t Carpels syncarpous septate, or apocarpous; ovules few, P
ful dulous erect or ascending:—[p. 171]

JJS Stamens alternate with the petals:—[p. 171]

§ Ovules and seeds pendulous :— [p. 171]

IT Leaves compound:— [p. 171]

Filaments free; fruit drupaceous indehiscent; leaflets
opposite . . . . . . . . . . . . . . . . . . . . . . . . XXXI. Simarbeff*

Filaments united in a tube; if free (Cedrela) fruit
I.—TKALAMIFLORM

Capsular, orif fruit drupaceous (Walnsa) then the XXXIV. Malacca.

Leaves simple:—[p. 170]

Petals 2-lobed, imbricate; raphe of seed ^

XXXV. Chifteiaceae—

Petals entire; raphe of seed dorsal:—

Petals usually valvate, fruit ^ 1-seeded

I. Olacinæ.

d pyrenes

II. Illicinæ.

Petals imbricate, fruit of 3-5

§Ovules and seeds erect or ascending:—[p. 170]

Ovary 3-5-locular, leaves ^

CelMtrinelB.

Ovary 1-locular, leaves simple or compound, or 2-5-

loolar, leaves compound ... -XLIII. &TM^to***

UStamens opposite petals; leaves simple or compound:—[p. 170]

Petals valvate; leaves usually stipulate^ ^

Petals imbricate; leaves without ^

SalWacelB.

§§Carpeis syncarpous 1-locular, placenta 3, parietali with

numerous ovules; disk !arge lining calyx^ube^ave^—

Stamens opposite petals and either (ANOACE^: some Polyalthiat^A^Z

flowers or (TrLUCÉ*: some Eeuocarpi) with anthers dehiscing

answered. or (BoRSEBACEI: Bursera) with balsaminous sap.

Sepals united below; if free (TMACE^: Grev,i, TrnulfEa) then

flowers not 3-merous; flowers 5-merous or 4-merous:

Stamens monadelphous:—[p. 172]

Stamens indefinite (in Eriodendron only 5-7) in a column

the style with only short free filaments towards apex and

upwards into phalanges opposite the petals; ultimate n

with anthers Mocular (2-locular in Eriodendron and

series of filaments in Jowftai, then with compound dig"*

and petals); staminal column adnate at base to contorted

lobes; often an epicalyx of bracts below e a l ^

Mawace*.

Eriodendron and Bombax simp'e .

Stamens definite or subdefinite in a column or cup
with mouth of tube usually with 5 sterile prolongations \( \text{rose} \),

the petals, the intervening sinuses bearing 1-5 2-locular

sometimes \((Eriolcena)\) in a column round style \( \text{free} \),

filaments from middle upwards, then with anthers

leaves simple, sometimes compound-digitate, and the

petals .......................................................... \( \text{XALY. O} \)

HHStamens free or \((TILIACE*: \) rarely) filaments slightly con

ring or shortly 3-5-adelphous at the base; anthers 2-locular:

Stamens indefinite or if subdefinite \((Triumfetta, CorchoW*)\)

twice as many as petals; leaves entire or lobed always

trees, shrubs or herbs ........................................ XXV.

Stamens always definite:—

Stamens usually twice as many, rarely only as many \( \text{as} \)

if isomerus then alternate with petals and quite free

compound unequally pinnate; trees with bambiniuous

XXXIII. \( \text{Burserace}^* \).

Stamens as many as and always opposite the pe\(\text{a}\)tales

usually are hooded over the anthers and are adnate to

at their insertion; trees or shrubs, often climbing, rare

leaves always simple. ........................................... XXXXIII.

II. CALYCIFLORJE.

•Stems herbaceous or woody, or if Heshy \((FICOIDE*: \) SesuvM \(\text{^*} \)

\( \text{^*} \GONIAACEE; \) CRASSULACE\(\text{^*})\) not flattened or articulated; leave:\ts

\( \text{tinct.:} - [p. 175] \)

+Ovary apocarpous with 1 or more than one carpel; or syncarp

several completely closed loculi; if ovary syncarpous 1-celle

FRAGACE\(\text{B} : \) Vahllici) the placentas not parietal:—[p. 174]

JOvules arising from the inner angles or from bases of caip

loculi, or if arising from apex of loculus \((SAXIFRAGACE\(\text{E}^*: \) \text{Mia})

then with ovules very many:—[p. 174]

Carpels solitary, excenetric, style terminal; flowers irregular.

definite often diadelphous stamens, or regular with generally

definite stamens; ovules many or few arising from inner a\(\text{o}\)
of carpel; calyx with odd sepal nearest axis; leaves \( \text{&} \)

always stipulate. ............................................. XLVI. Legumino\(\text{se}.\)

Carpels several or if solitary either \((\text{some} \text{ROSACES})\) with

not terminal and with odd sepals remote from axis or \((\text{some}

\text{NARACEE})\) with ovules basilar and with exstipulate leaves:—

\( \text{§Flowers hermaphrodite:} - [p. 173] \)
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 XLI. **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 placenta suspended from top of a 1-locular ovary. XLVIII. **Saxifragaceae.**

Seeds with curved embryo enclosing albumen; ovules from inner angle or from base of loculi. LXV. **Ficoidese.**

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 *(Punica)* 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; placenta confluent in axis of ovary; climbing, tendril-bearing herbs and shrubs. LXI. **Cucurbitaceae.**

Flowers not symmetrical; stamens numerous, free or conjoined, anthers ovoid; placenta projecting from inner angle
BENGAL PLANTS. [Synopsis of the

into carpellary chamber; styles free or only united at base; herbs or shrubs with more or less succulent leaves and stems. .................. LXII. Begoniaceae*. (Ovules suspended from apices of carpels or loculi; ovaries always inferior, usually more than 1-locular; ovules and styles 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

L.I. Haloragaceae*. Terrestrial, or if aquatic not submerged, trees and shrubs; hermaphrodite or rarely (COMBRETACEAE: Gyrocarpus) 1-sexual flowers; styles united; ovules (except Gyrocarpus) more than one:—

Ovary 2-6-locular; maritime species (except Camilla) leaves opposite ............... LII. Rhiophoraceae*. Ovary 1-locular; land species (except Lumnitzera); leaves opposite or alternate ............... LIU. (Jombretaceae**

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. Cornaceae*

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. Araliaceae*

Herbs; fruit dry separating spontaneously into two dry seeds; dehiscent carpels with usually glandular vittae containing an essential oil

†Ovary f T T S U Cular, with 3-5 parietal placentas with many styles usually distinct; styles usually distinct in SAMPDACEAE: Cassia; and in PASSIFLOREAE; lobes of calyx, petals and stamens definite; flowers regular:—[p. 172]

§Flowers hermaphrodite or if 1-sexual (PASSIFLOREAE: Carica) with ovary superior:—[p. 175]

¶Herbs of small size, the leaves beset with glandular hairs; styles quite distinct [p. 175] .................. XX. Drogeraeaceae.
UL-COROLLIFLORJE.

Shrubs erect or climbing, or trees, without glandular hairs [p. 174] powers 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 minute; styles distinct often 2-partite; leaves alternate LXXX. Datisce*.

Flowers fleshy, flat and articulate leaves minute; flowers large hermaphrodite 5 calyx adnate to ovary; lobes of calyx, petals and stamens LXIV. Cactace*.

HI. COROLLIFLORJE.

Ovary inferior; stamens equal in number to, rarely fewer than, and irregular lobes of corolla; flowers regular or, less often, irregular; fruit never of two elongated follicles:— [p. 176]

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 LXX. Caprifoliaceae.

Stipules present, inter- or intrapetiolar, or leaflike and whorled with their leaves' flowers sometimes in heads without involucres 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. Caropanulacea.
Stamens 2, fewer than the unequal corolla-lobes, the united in a column along with the style; ovary 2-locular, cha.

many-ovuled [p. 175]. _____________________ LXXII-

Ovary superior, or if inferior then (VACCINIACEÆ; most STYBACBR) stamens more numerous than corolla-lobes; if with stamens many as corolla-lobes and ovary inferior then either (MYBSINEÆ with stamens opposite corolla-lobes, or if (APOCYNEÆ occasionally; with stamens isomerous and alternate with corolla-lobes but ovary inferior stamens opposite corolla-lobes, or if (GESNERACEÆ numerous than corolla-lobes (GESNERACEÆ) then corolla irregular locular many-ovuled ovary, or if ovary imperfectly 2-locular the filam not united in a column with the style;— [p. 175]

Ovary 1-locular, with a free-central placenta; stamens (except F bago) epipetalous:

Stamens equal in number to and opposite the lobes of the reg
corolla:—

Ovary 1-ovuled; styles or style-branches 5

LXXV. Plumbaginaceæ.

Ovary 2-many-ovuled; style undivided:—

Fruit capsular; herbs. …………………. LXXVI. Primulaceæ.

Fruit indehiscent; trees or shrubs. LXXVII. Myrsinaceæ.

Stamens 2, alternate with the three anterior lobes of the irregular corolla. ……………………. XCIV. Lentibulariaceæ.

Ovary 2-many-, rarely 1-locular, placentas axial or less often parieta- » never free-central:—

Stamens free from the corolla and usually more numerous than i lobes; trees or shrubs:—

Flowers hermaphrodite; ovary inferior or half-inferior; stanie ns twice as many as corolla-lobes; style simple; ovules in chamber many………………. LXXIV. Yacciniaceæ.

Flowers dioecious; ovary superior; stamens equal to and oppoite or twice as many as corolla-lobes or m&ny; styles 2-8; ovules always twice as many as styles, either two in each undivi<ed loculus, or solitary in each compartment o; subdivided loculi

LXXIX. Ebenaceæ.-

Stamens attached to the corolla :—

tOvary 3- or more-carpeled, or if 2-carpeled (some SAPOTACEÆ) 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. Sapotaceæ—
Ovary inferior or half-inferior or at least partially attached to calyx-tube; ovules in each chamber 2 or more [p. 176]

LXXX. Styraceae.

1. Ovary 2-carpelled, or if 3-5-carpelled (POLEMONIACEAE; some CONVULACEAE* and some VERBENACEAE) with stamens either equal to or few than the corolla-lobes:—[p. 176]

a. Corolla regular, rarely slightly oblique; stamens as many as alternate with corolla-lobes, or if oblique or irregular and perfect stamens fewer than the corolla-lobes (GENTIANACEAE: Browallia; POTENTILLA: Camara) then stamens alternate with carpels:—[p. 179]

b. Stamens fewer than corolla-lobes (SOLANACEAE: Browallia; PLUMBAGO: Livinanthemum) 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

LXXXI. 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 (LOGANIACEAE and GENTIANACEAE 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 (APOCYNACEAE*; 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 below the smooth non-stigmatic entire or 2-nd of style; fruit berry-like or drupaceous or of two follicles; ovules sometimes few (1-6) in each, usually many; stipules 0, or rarely stipellate; by interpetiolar glands or

h. 5 / i. 177
§§ 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 absent; fruit usually of 2 free follicles [p. 177]

LXXXIV. Asclepiadeae•

• Carpels as well as styles always united; stigma terminal; corolla-lobes imbricate or valvate or, if contorted (LOGANIACEÆ: Fagraea; GENTIANACEÆ: except Gentianella and Limnanthemum), then twisted to the right; stamen and corolla-lobes 4-5, occasionally many:—O 177

Leaves joined at bases by interpetiolar stipules, raised horizontal lines, always opposite; ovary 1-locular; corolla-lobes valvate or imbricate, or contorted (Fagraea) corolla long tubular and Petals 2-fid . . . . . . . . . . . . . . . . . . . . . . . . . . . . . LXXXV. Loganiaceae*

Leaves without even rudimentary stipules; ovary 1-locular or if 2-locular (Exacum) with corolla short and rotate and placentas simple; corolla-lobes contorted or if valvate (Limnanthemum) the leaves alternate

LXXXVI. Gentianaceae*

§ Leaves alternate or if opposite (POLEMONIACEÆ: Phlox) the pistil 3-merous; carpels never free; stamens never hidden by a ring of scales; if aquatic floating herbs (CONVOLVULACEÆ: one Ipomoea) 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. Polemoniaceae.*

Carpels 2 or if 3 (HYDROPHYLLACEÆ: Hydrolea sometimes) with corolla-lobes imbricate and ovules in each loculus numerous, or if 3-5 (certain CONVOLVULACEÆ) with corolla pli cate and ovules in each loculus 1-4 erect from the base of the loculus:

**Ovules in each carpel numerous and ovary 2-locular rarely (HYDROPHYLLACEÆ: Hydrolea) 3-locular; if few (some HYDROPHYLLACEÆ) 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;— p. 179]

TT corolla-lobes imbricate or if (rarely) contorted the IT/11* always capsular; style 2-fid or styles 2 [p. 1793 LXXX VIII. Hydrophyllaceae*.
Corolla-lobes plicate or if (rarely) imbricate the style entire [p. 178]. 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 inferior ... .XC. Convolulaceae.

Corolla 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 VERBENACEAE) then with radicle inferior: — [p. 177]

JJCarpels 2- or more-ovuled, usually the ovules many, but if 2 then the ovules superposed, or if ovules 2 collateral (ACANTHACEAE: 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 tension of placentas (some GESNERACEAE) only imperfectly so, ovules many:

Parasitic leafless herbs; seeds very small, embryo very minute. XCIIL Orobancheae*.

usually opposite. XCV. Gesneraceae.

Ovary 2-locular or if Mooular then (some BIGNONIACEAE) the seeds large and closely packed in the substance of, or (PEDALINEAE: Martynia) the seeds small and protected within locelli formed by, the much accrescent parietal placentas: —

Fruit opening elastically from the apex by 2 valves; seeds usually supported on retinaculum*; leaves usually opposite. XfLVIII. Acanthaceae.

usually opposite. AUVIIX. rarely

Fruit dehiscing but not opening elastically, indehiscent: —

Seeds large transverse, usually with a branous marginal wing, with horizontal embry.
BENGAL PLANTS.

[Synopsis of the]

no albumen, radicle centrifugal; fruit caps indehiscent and filled with fleshy or spongy P mostly trees with opposite compound leaves.

XCVI. **Bignoniaceae.**

Seeds small or minute; herbs or shrubs with simple leaves:—

Ovary 1-locular with ovules attached sin seriately under the laminae of a projecting 2-laminate placenta or 2-locular each divided with ovules attached singly or 2-seriately to inner angle of each subdivision; seeds not a

Ovary 2-locular, the placenta attached to the of the septum; seeds almost always alabino.

J Carpels 1-ovuled, or rarely 2-ovuled, and so the ovule lateral not superposed and chambers of fruit always indehiscent; leaves almost always opposite:—

Fruit not 4-lobed or if 4-lobed drupaceous; if separating into 4 distinct nutlets or (less col.

IV. INCOMPLETE.

*Flowers hermaphrodite, less often (some CHENOPODIACEAE, LORANTHACEAE, LAURINEAE) 1-sexual and then (CHENOPODIACEAE) the embryo peripheric annular or (LORANTHACEAE) the ovule not clearly disting

Fruit separating into 4 distinct nutlets or (1-seeded)

Ovary inferior; seeds with copious albumen:—

Ovary syncarpous completely or partially 6-, rarely 5- or 4-locul

ovules very many superposed 2-seriately in each loculus or 1-seria


Natural Orders.] IV.—INCOMPLETE.

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on the opposite aides of each placenta; seeds with a distinct testa; Perianth 3-lobed, often irregular; stamens 6; scandent herbs or shrubs ........................................CVI. Aristolochiaceas.

Ovules V, ovules V-3; seeds with no proper testa; stamens as many as and opposite the inner or only perianth-lobes:—

Perianth-tube not constricted above the ovary, lobes rather long:—

Stamens as many as and opposite or twice rarely thrice as many

S n t i ^ a W at e tube long or short; — always

* ta one series, anthers normal j £ * £ %, ovules arpoosed;

solitary or 2 collateral or several 2 seriex, perianth calycine or corolline; trees or shrubs

Perianth-lobes imbricate ^ stamens often in 2, rarely in

series; ovules pendulous:— i seriex; stamens

Perianth-tube rather long, lobes 4-5, twice as many as the lobes, sometimes 8 and 1; ovary many, very rarely thrice as many, antherib

IV. Santalaceae*.

Ovules three, two or solitary, pendulous from the tip or below toe tip of a free funicular central axis; perianth always simple, calycine or corolline; terrestrial herbs, shrubs or trees frequently semiparasitic on roots. ..........CXIV. Loranthaceae.

Ovule solitary, erect from the base of the ovary but at first not adhere to the persistent perianth-base; 1-ocular

* 1-ovuled or occasionally (most Phytophylactacea*) of several free. «

Seeds without albumen or if albuminous (Thymelaceae* some times) the embryo straight; trees or shrubs, very rarely herbs :— [p. 180]

Perianth-tube constricted above the ovary, w ^ ^ J ^ Persistent, upper part deciduous, lobes 2 or 4 short, TMTM^ taper truncate; stamens as many as and alternate with ovules on a lateral placenta :- [p. 180]
1-2-celled, each cell 1-ovuled; shrubs or trees

CXI. Thymelaeaceae

Perianth-tube very short, lobes either 6 or 4, stamens as many or twice as many as and opposite the 1-locular; shrubs or trees or, very rarely, parasitic twigs.

CXII. Amaranthaceae

Leaves extispulate or if stipules present (Phytolaccaceae) then minute or reduced to tubercles:

Perianth tubular, base adherent to ovary, tube short or persistent and often accrescent in fruit, limb persistent and deciduous, truncate or 3-5-toothed or -lobed, the segments plicate or simply valvate; carpels solitary, 1-ovuled, simple.

CIII. Chenopodiaceae

Perianth membranous, herbaceous or coriaceous, never scariosus; 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 jointed rachis, or very rarely simply spicate, usually ebracteate, rarely bracteate, very rarely both bracteate and 2-bracteolate; 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, or

IV. Phytolaccaceae

Stipules connate as an area embracing the nodes, persistent 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; styles or styles 2-3; herbs rarely undersubs, shrubs, or trees:—[p. 184]

*Flowers with no alternate (some MRTIACE;E) monopistillate trees, shrubs or herbs:—[p. 184]

**Ovary 1-locular, 1-ovuled or if syncarpous (some PIPERACE;E), 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]

Leaves stipulate or if stipules absent (PIPERACE;E: Peperomia) the flowers 2-sexual and perianth 0:—

IV.-INCOUPLETJE.
BENGAL PLANTS.

Seeds with little or no albumen, the embryo nearly or quite as long as the cotyledons, and the embryo nearly or quite as long as the cotyledons, and the embryo nearly or quite as long as the cotyledons, and the embryo nearly or quite as long as the cotyledons, and the embryo nearly or quite as long as the cotyledons, and the embryo nearly or quite as long as the cotyledons, and the embryo nearly or quite as long as the cotyledons, and the embryo nearly or quite as long as the cotyledons, and the embryo nearly or quite as long as the cotyledons, and the embryo nearly or quite as long as the cotyledons, and the embryo nearly or quite as long as the cotyledons, and the embryo nearly or quite as long as the cotyledons, and the embryo nearly or quite as long as the cotyledons, and the embryo nearly or quite as long as the cotyledons, and the embryo nearly or quite as long as the cotyledons, and the embryo nearly or quite as long as the cotyledons, and the embryo nearly or quite as long as 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Natural Orders.] VL—MONOCOTYLEDONS.

^e nodes, the scales of adjacent nodes alternate; flowers in spin.
ianth-segments 1-2, small; stamen ^ ^ ^ a r ^ ovuled, seed solitary, albumen none [p. 183] CXVIII- uasu

Y. GYMNOSPERME^l.

L(veb or scales undivided, opposite, alternate or in clusters:--
ianth present in bothies, oi male membrane-

Perianth sriCular

Leaves very

anth absent from the flowers of both sexes

YII. MONOCOTYLEDONS.

Perianth 2-seriate the segments of both series co

subherbaceous and then with ovary interior, or s only

syn carpohs, rarely (some X, MDM), the per, an th l-<m

1-serial oalycline and then in aqu

ovary: ] 187

 inferior

outer

perianth-segments ealycline, inner w o b m e W

rarely absent;

stamenS 3 or 6 or 9, rarely by further multiplication mo

flower

perianth-segments corolline like the inner:

 lowers regular or occasionally slightly irregular by even ^

° of a segment of the outer series; stamens b or

gynoeicum; marsh or land plants,

lowers irregular, usually markedl r so from

gynoeicum confluent as a column bearing a in y

Orchidace

seeds conspicuous, with copious albumen:

ote

P^tely enclosed within the albumen:—[p. 186-1
Flowers very irregular, outer series of perianth-segments calycine; perfect stamens either solitary with 5 reduced to staminode, with a single staminode; seeds often with an arillus.

CXXVIN. S.

Flowers regular or only slightly irregular:

Outer series of perianth segments calycine; stamens 6.

CXXIX. Brom.

Both series of perianth-segments corolline or rarely TACCACEAE) both series subherbaceous:

Stamens 3, opposite the outer perianth-segments; loculi regular or obliquely irregular; locules of the usually 3-ovary many-ovuled.

CXXXI. ir.

Stamens 6, very rarely (some AMARYLLIDACEÆ) more or if 3 then (AMARYLLIDACEÆ and HÆMODORACEÆ) some opposite the inner perianth-segments or if (Dioscorea) times) only the stamens opposite the outer perianth-segment.

perfect the locules of the ovary only 2-ovuled:

Ovary l-locular, placentas parietal, many-ovuled; s » 6, hooded.

CXXXIII. Taccaceæ.

Ovary 3-locular, or if l-locular (AMARYLIDACEÆ) rarer the stamens not hooded:

Flowers 1-sexual, very small; stems scandent; stamens 6, or if 3 these opposite the outer perianth-segments.

CXXXIV. Dioscorea.

Flowers hermaphrodite, conspicuous or very large; B not scandent; stamens 6 rarely more or if 3 these opposite the inner perianth-segments:

- Ovary inferior, loculi many-, rarely 1-2-ovuled; embryo very small, embedded in the albumen.

CXXXII. Amaryllidaceæ.

Ovary free in the fundus of the perianth, or superior, less often inferior; loculi I-many-ovuled embryo not completely covered by the albumen.

CXXIX. HæBinodoraceæ.

tOvary superior with embryo completely enclosed within the perianth; or if ovary half-inferior (some BOBUEGHIACEÆ) the perianth 2-merous and the ovary Mocular; if embryo not completely closed within the albumen, then (PONTEDEBIACEÆ) the plants

or (COMMENVOEÆ) only the inner perianth segments corolline:

flowers regular or only slightly irregular: [p. 185]

{Onto as well as inner series of perianth-segments, if corolline:—[p. 187]
Orders.]

VI.—MONOCOTYLEDONS.

Perianth-segments of both aeries present and isomerous:

Perianth-segments 2-merous; stamens 4; ovary inferior. 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. Inaresolution very various, axillary or terminal. CXXXV I. Aquatic erect or floating herbs; embryo cylinndrical, as in Juncaceae, and as lying within a central canal in the albumen; minoraescence racemose or spicate, terminating a 1-leaved scape. CXXXVII. Pontedeneaceae.

Perianth of the outer series either a large solitary segment embracing the inner 3-merous segments or else absent; flowers:

{Outer series of perianth-segments calycine, inner series corolline, embryo marginal or only partially enclosed within the albumen...} CXXXIX. Commelinacea.

... "... CXXXIX. "... CXXX9
Leaves broadly flabellate- plicate or pinnatisect; trees or climbing shrubs; embryo situated in a small pit near the periphery of the albumen; flowers in spadices [p. 187] CXLII. Palmacea. Perianth with a herbaceous outer and a rather larger more petaloid inner series of segments; ovary apocarpous; embryo horseshoe-shaped; aquatic erect herbs with conspicious flowers disposed in whorled panicles of umbels or spadices and simple umbels [p. 187] CXLVII. § Perianth absent or reduced to scales or bristles; or if Perianth herbaceous or hyaline (Naiadaceae often) the segments either regularly 3-merously 2-seriate or if, rarely, 6 in 2 rows then aquatic weeds with small flowers disposed in simple racemes or spadices and with a fleshy embryo that is not horseshoe-shaped:— [p. 189] ++ Inflorescence of many-flowered or few-flowered spadices or spadices these not covered by spathes or spathaceous bracts. Aquatic or marsh plants; flowers small not in spadices or 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 frond; albumen present or 0. CXLVI. Lemnaceae. Fixed herbs with erect scapigerous or elongated floating submerged leafy stems rising from a fixed usually creeping stock; perianth present or absent:— Perianth herbaceous or hyaline, very rarely of 6 2-segmented segments and if so in small scapigerous herbs with racemose or spicate flowers, ofterner of 4 or 3 or 2 segments but frequently absent; inflorescence various but rarely spadiceous and if so in herbs with leafy submerged or floating stems albumen 0, embryo large fleshy not horseshoe-shaped CXLVIII. Naiadaceae. Perianth of filiform bristles or membranous scales; leaves scapigerous herbs with creeping rootstocks emitting stems; leaves elongated linear parallel-veined unarm. flowers in cylindric or globose 1-sexual superposed naked or 1-bracteate at the base. . . . CXLIV. Typhaceae. Terrestrial or epiphytic plants or if (some Abodiaceae) aquatic fixed or rarely free floating herbs, the flowers in *V* & *G* *subtended by a usually much modified spathe:- Trees or erect or scandent shrubs with flowers diceci...
perianth 0; leaves ensiform parallel-veined spinulose along the edges and the central costa beneath; spadices with spathaceous, little modified bracts, fascicled or panicled; seeds albuminous.

CXLIII. Pandanaceae.
Herbs, epiphytic scandent less often erect, or more usually erect terrestrial, occasionally aquatic fixed or rarely free floating, with flowers monoecious in the same spadix 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. Aroidaceae.

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. Eriocaulaceae.

Flowers 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 the seed-coats adherent to the pericarp, very rarely free within; embryo at the base of the albumen; sedges.
BENGAL PLANTS. 

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. *halbrences*):

Sporangia with a ring:—

King equatorial, encircling the sporangium:—

Ring vertical or if transverse (Trichomanes) the caudex and fronds rigid.

Ring opercular, crowning the sporangium.

Sporangia without a ring, opening down one side:

Vernation circinate: sporangia marginal or dorsal.

Vernation erect; sporangia spicate.

Leaves bearing sporangia on their upper surfaces (VIII. *halbrences*):

Fugacious floating annual aquatic herbs.

Perennial marsh-herbs with wide-creeping slender roots.

Leaves small in proportion to the stem, the fertile ones very lined to a particular region:—

Leaves in whorls, the fertile ones peltate forming a spike of the stem bearing sporangia on their inner faces (IX. *equalea*):

Leaves not whorled, the fertile ones flat with sporangia (X. *lycopodina*):

Sporangia uniform.

Sporangia of two kinds.
IV. BENGAL PLANTS.

A.—PHANEBOGAMIA.

I.—THALAMIFLOR.E.

**Sepal** or con nate in a tube with imbricate or valvate or open lobes, free adnate to the base of the ovary. Torus small, or raised or stalk-like, or thickened and fleshy annular or cupular or flattened, entire or to 0. broken into the I or s or 2 many seri at as many as sepals or fewer by when disk absent or inserted on the calyx, free or adnate to calyx, or embedded in the base of the torus or rarely on the base of the calyx or within the disk. *Carpels* free or connate, or in few or less thickened disk.

Order I. RANUNCULACEJE.

Herbs, rarely shrubs, annual or perennial; leaves radical or opposite; simple, rarely compound; stipules 0, or Ja nate to Petiole. *Flovers* regular or irregular, hermaphrodite larely Sexual, very rare (PeBonia only) — **Sepals** 5 or more, *buds* usual, often petaloid, imbricate, rarely valvate in 0> or 5 or more, rarely 3, often minute or deformed. *Stamens* many, hypogynous; anthers adnate; dehiscence longi- tudinal. *Carpeh* many, rarely 1, usually free, 1-celled; stigma simple. Ovules 1 or more on the ventral suture, anatropous, erect
with a ventral or pendulous with a dorsal raphe. *Frvit* 0

aehenes or many-seeded follicles. *Seed* small; albumen rarely fleshy; embryo minute.

Leaves opposite; sepals valvate; climbing shrubs:—

- Petals 0; petiole not produced as a tendril.
- Petals many; petiole produced as a tendril.

Leaves alternate; sepals imbricate; herbs:

- Carpels free, 1-ovuled:
  - Leaves compound; petals 0; ovule pendulous.
  - Leaves simple; petals 5; ovule erect.

Carpels united at base; ovules several; leaves much dissected.

1. Clematis Linn.

Woody, usually climbing undershrubs; leaves compound, petiole sometimes twining but not produced as a tendril; stipules 0. *Flmvrs* axillary or terminal, solitary or paniculate. *Sepals* usually 4, valvate, petaloid. *Stamens* numerous. *Carpels* many, each with 1 pendulous ovule; styles usually long, bearded. *Frvit* a head of sessile or many aehenes, each with the style persistent as a long twisted tail or a long, straight, naked beak.

Flowers solitary axillary; aehenes with long, straight feathery tails. **Clematis**

Flowers in axillary panicles; aehenes with long feathery tails:—

Sepals spreading from the base:

- Filaments glabrous; flower not exceeding a half-in. across.
- Filaments hairy; flower more than 1 in. across.

Sepals erect with recurved tips; filaments hairy; flower 1 in. across. **Thalictrum**

1. CLEMATIS CADMIA Ham.; *F. B. I. ii. 671.*

Tropical jungles of N. and E. Bengal.


2. CLEMATIS GOURIANA Eoxb.; *F. B. II. 670; F. B. II.*

E. D. 0.1356.

N. Bengal, ruins of Gour; Chota Nagpur, on and other mountains.

A climber.
3. Clematis Wightiana Wall.; F. B. L. S.
   Orissa, on mountains.
   A climber.

   Chota Nagpur, on Parasnath and other.

2. Haravclia DC.
   Woody climbing undershrubs; leaves* 2-foliolate,
   ending in a tendril; stipules 0.
   Pal 4-5, valvate, petaloid. P* petals, ovary
   Pendulous ovule; styles distinct, sometimes
   head of sessile or stalked achenes.

5. Naravelia zeylanica DC.; F. &. Zeylanica
   Hedges and thickets, general.
   A climber. B. Chagul-bati, murcha

3. Thalictrum Linn.
   Perennial rigid herbs; foliage alternate,
   eating, often auricled or stipulate. P petals, bracteate, petaloid.
   Nicies, often polygamous. Sepals 4-6, with
   Stamens numerous. Carpes any tent. 1 head
   Pendulous ovule; styles distinct, sometimes
   a head of sessile or stalked achenes.

6. Thalictrum javanicum Bl.; F. B. L. B.
   Chota Nagpur, on Parasnath.
   A slender, stiff herb.

4. Ranunculus Linn.
   Annual or perennial herbs; leaves altern, plicate
   dissected; stipules membranous or 0.
   Pels many, each with 1 ascending ovule,
   lead or spikelet of beaked achenes.

5. Ranunculus sceleratus Linn.; F. B. L. i. 19; B. D. 19.

Banks of rivers and nullahs, fairly general.  
An acrid weed.  *Vernac.* Polica (*Tirhut*).

5. Nigella Linn.

Annual erect herbs; leaves alternate, 2-pinnately stipules small.  *Flowers* terminal peduncled, white, yellowish, sometimes with an involucre of floral leaves.  
5, regular, deciduous, imbricate, petaloid.  *Petals* 5, with claw and small 2-fid limb.  *Stamens* numerous.  *Carp* sessile, connate below, each with several horizontal ovules on the ventral suture; styles usually long.  *Fruit* dehiscing along ventral suture of free portion of carpels.

8. *NIGELLA SATIVA* Linn.; E. D. N. 158.  *N. infoca*

In cultivated ground, spontaneous, especially western parts.  
A crop, also occurring as a weed.  *Bong.*

Order II. DILLENIACEAE.

Trees or shrubs, sometimes climbing, or herbs; leaves simple, entire or toothed; stipules 0, but petiole rarely with lateral deciduous stipules.  *Flowers* regular, phalanthropodite, often showy, white or yellow.  *Disk* 0.  *Sepal* 6, more or fewer, imbricate, persistent, often accrescent.  
rarely more or fewer, caducous.  *Stamens* many, hypostamous; anthers innate; dehiscence longitudinal, intorse or lateral by terminal pores.  *Carpels* 1-many, free or cohering; stigma simple; ovules solitary amphitropous, or few asciduous or numerous on the ventral suture.  *Fruit* indehiscent beitly or dehiscent follicular.  *Seeds* 1 or few, arillate, rarely many and (*Dillenia*) exarillate; testa crustaceous, raphe albumen fleshy; embryo minute.

Climbing shrub; carpel 1; filaments expanded, anther-eell remote, oblique.  
Trees; carpels 5-20; filaments slender, anther-cells parallel.


Woody climber; leaves scabrid, parallel-nerved from the mid*.

*Flowers* numerous, hermaphrodite, white, in terminal pani*.
7. Dillenia Linn.

Trees; **caesp* large simple, parallel-nerved from the midrib; $v$leso. ^Hfloweri^Ls with or before the leaves large or very large, solitary or fascicled, yellow or white. $b$petals $b$ 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 in centre; ovules many. *Fruits* globose, composed of an $e$escent calyx enclosing the matured indehiscent carpels. Seed$^*$ not $d$ilate, pulpy or not.

$<lo>$$<3$ with the leaves, large (6 in. across), solitary, petals white; $P$els about 20; fruit as large as the human fist

$<lo>$$<3$ with the leaves, petals yellow:—

v$er$ers $s$ma$ii$, (L5 5[cit]1 ; carpi, 5-7. fruit not larger than a plum.

$icela$ with scattered bracteoles near the middle; toweis 2 m. across; carpels 5-7. $icela$. $ncabiella$.

Pedicels without bracteoles; flowers 1 in. across; carpels 5-12. fruit not larger than a plum.

$icela$ with scattered bracteoles; flowers 1 in. across; carpels 5-12; fruit as large as the human fist.

Rower large, solitary, 4-5 in. across; carpels 8-12; fruit as large as a small apple.

10. *Diuenia imyca Linn.*; F. I. i. 36; E. U D. 428. D.

$corner* P. I. ii. 650.

Planted, but also readily self-sown in all the provinces.

A tree. *Beng.* Chalta, chalita, hargéza; *Santal.* Korkot;

*Vriya* Oao, rai.

U. *Dillenia scABEEiA Boxb.;* F. I. ii. 653; F. B. 11-38.

Chittagong.


BENGAL PLANTS.

Behar and Chota Nagpur, common; V. Bengal* rare.

N. Bengal, submontane forests.

Order HI. MAGNOLIACE^.

Trees or shrubs, sometimes climbing, usually aromatic, alternate, simple, entire, rarely toothed; stipules convolute. *Flowers* hermaphrodite, rarely 1-sexual, axillary or terminal, showy, yellow, white, or pink. *Disk* 0. Perianth of similar *Flowers* and petals, hypogynous, imbricate, in 3 or more *Flowers* ternate, caducous, rarely 0. *Stamens* many, hypogynous; filaments round or flat, free or connate; anthers basified; *Carpels* in free or partly united, in 1 or more whorls on a short or long style usually short, stigmatic on inner face; ovules 2 or more. *Fruit* a cone of baccate, rarely woody, indehiscent, or of follicular carpels. *Seeds* 1 or few, funicle sometimes slender, testa crustaceous and closely united to tegmen, or fleshy; tegmen distinct; albumen granular or fleshy or oily; minute.

Carpels in a loose spike on a stalked *gynophore*.
Carpels densely packed on a sessile *gynophore*.

8. *Michelia* Linn.

Trees; *leaves* evergreen or deciduous; buds enclosed in the convolute caducous stipules. *Flowers* solitary, usually axillary. *Perianth* of 9-20, at least 3-seriate, similar *Flowers* petals. *Stamens* numerous, many-seriate; filaments flat, anther adnate and introrse. *Carpels* many in a loose spike on a stalked *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.
Order IV. ANONACEAE.

Trees or Shrubs; leaves evergreen or deciduous; buds enclosed in the connate convolute caducous stipules. Flowers large terminal, 8-carpellate; petals 6-12, 2-4-seriate. Stamens numerous, many. Carpels sessile on a sessile gynophore; ovules 2. Fruit an spike of persistent, adnate, 1-2-seeded follicles opening fleshy, with a long funicle, pendulous; testa coriaceous or crustaceous; embryo small, sometimes minute.

9. Magnolia Linn.

11. 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. Champā, champaka; *Uriya Kanchana uv, champa.*
Carpels not confluent in front:—
   Petals imbricate:—
   Sepals imbricate .......................................  Sageresia
   Sepals valvate ...........................................  Uvaria
   Petals valvate:—
   Anther-cells not concealed by overlapping connective:—
   Petals of inner series larger than those of outer:—
      Ovules 0 or more ........................................  Saccoeranthus
      Ovules 1-2 ................................................  AlphoB
   Petals subequal, ovules 4-8 ................................
   Anther-cells concealed by overlapping connective:—
   Peduncles hooked; petals connivent at concave base:—
   Peduncles not hooked:—
      Petals of both series flat, lanceolate, subequal, spread
      the base:—
      Ovules many, 2-seriate ................................  Cananga
      Ovules definite:—
      Ovules 2-6, 1-seriate on the ventral suture ........  Unona
      Ovules 1-2, basal or subbasal ...........................  Polyalthia
   Petals of the two series unequal:—
   Petals of outer series spreading, those of inner connivent, overarching stamens and pistil:—
   Petals of outer series thick, rigid, connivent, those of inner ........................................  Melosperma
   Carpels confluent; petals valvate, those of outer series thick, rigid, connivent, larger than those of inner; anthers concealed by overlapping connective ..........................................  A*

10. Sagersa Dalz.

Trees; leaves shining, glabrous. Flowers small, axillary, or fascicled on woody tubercles, hermaphrodite or 1-sexual. Sepals 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.

spi« A tree; stamens 9 ripe carpels an inch long; seeds with a i. about 12 in 2 rows. Beng. Dwainan (Chittagong)—
11. Uvaria Linn.

Scandent shrubs; _leaves_ dull, pubescence stellate. _Flowers_ cream-tolar leaf-opposed, rarely axillary, solitary or in cymes or las-

^e s., yellow, purple or brown. _Sepals_ 3, valvate, often connate

b e W _Petals_ 6, imbricate, in 2 series, orbicular, ovate or oblong.

^omite, connate at the base. _Stamens_ numerous; connective

ovate, oblong, truncate, or subfoliaceous. _Thalam_ depressed,

^uentose. _Carpels_ many, linear-oblong; style short, thick,

ovules 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-fid.; flowers 2 in. across, brick-red, pedicels (1 m.)

longer than buds; carpels globose or oblong, shorter than the 1-oin.

^ng stipe ....................... Hamilton^e

Peduncles many-fld.; flowers 2 in. across, dull purple-red, pedicels

(93 in.) shorter than buds; carpels oblong, exceeding the'4 m. long

stipe ................................................................. macrophyllt.

^aves underpin, Von^g^v densely'velvetv' beneath; peduncles 1-2-fld.

flower s under 1-5 in. across; carpels less than 5 in. long, narrow

ovoid, with very short stipe; 1-2-seeded............................

^erves quite glad on both sides, 4-9 in. long; flowers 1 «ACOB

C^Pels 1 in. long, ovoid or oblong, stalk over 1 in. long ............

17. _UVARIA HAMILTONI_ Hook. f. & Thorns.; F. B. I. i. 48.

Behar, Monghyr; N. Bengal; E. Bengal, Madhupar

jungles.

A climber.

^ _UVARIA MACROPHYLLA_ Roxb.; F. I. ii. 663; F. B. I. i. «,

E. D. u. 69.

Chittagong.

A climber. _Beng_. Bagh-runga.

19. _UVARIA FERRUGINEA_ Ham. _Ellipeia ferruginea_ t. *

ii. 52.

Tippera.

A climber.

F. B. I. i. 50.

Orissa, Khurda.


12. Saccopetalum Benn.


Peduncles very short (25 in. long), solitary in old axils; *Petals* and *Carpels* oblong-lanceolate; carpels glabrous.

Peduncles very long (2-3 in. long), cymose, leaf-opposed; *Petals* and *Carpels* oblong-obtuse; carpels puberulous.

21. *Saccopetalum Longiflorum* Hook, f. & Thonis.;

N. Bengal, Purnea; Chittagong, thence introduced Calcutta Garden in 1810, but not found wild since.

A tree.


Behar; Chota Nagpur; Orissa.

A tree. *Hind.* Kari; *Kol* Lapkari; *Santal* Uriya Patmossu.


Trees or shrubs. *Flovers* hermaphrodite or 1-sexual, green or red, solitary, fascicled or cymose, axillary or extra-axillary. *Sepals* 3, valvate, small. *Petals* 6, 2-seriate, valvate; smaller, sepal-like, inner connate when young, at length contiguous, ovoid; dehiscence extrorse; connective slightly apiculate. *Carpels* many, linear-oblong; style short, oblong; ovules 1-2, rarely 3-4. *Fruit* of globose or oblong 1- or more-seeded ripe carpels.
28th Anusa ROXBURGHIANA Hook. f. & Thorns.; F. B. I. i. 87.
Uvaria dioica F. I. ii. 659.

Tippera; Chittagong.

24 A Smal tree* Vernac-Tasbi.
- MIUSA 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;
OSSA, Khurda.


Small tree; leaves glabrous above, glabrous or tomentose beneath;
both sides* Carpels glabrous, -5 in. long, shorter than the glabrous
stipe.
- ANSONIA ROXBURGHIANA Hook. f. & Thorns.; F. B. I. i. 87.
Uvaria dioica F. I. ii. 659.

Tippera; Chittagong.

24 A Smal tree* Vernac-Tasbi.
- MIUSA 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;
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Small tree; leaves glabrous above, glabrous or tomentose beneath;
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- ANSONIA ROXBURGHIANA Hook. f. & Thorns.; F. B. I. i. 87.
Uvaria dioica F. I. ii. 659.

Tippera; Chittagong.

24 A Smal tree* Vernac-Tasbi.
- MIUSA 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;
OSSA, Khurda.
15. **Artabotrys** B. Br.

Scandent shrubs; *leaves* shining, glabrous. *Flowers* solitarily or fascicled, on woody hooked recurved peduncular branches. *Sepals* 3, valvate. *Petals* 6, valvate, in two series, with connivent concave bases, and flat subterete or clavate spreading 1-3 mm. *Stamens* numerous; oblong or cuneate, connective truncate or produced; anther-cells dorsal; dehiscence extrorse. *Carpels* 6-10; 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, glabrous when expanded; carpels 1-5 in. long. *Artabotrys odoratissimus* K. Br.; F. B. I. i. 54; E. 1431. *Uvaria odoratissima* F. I. ii. 666. Planted in gardens, especially in C' Bengal.

A climber. Beng. Kantali-champ, from the fancied resemblance of its odour to that of the Jak.


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.

17. *Unona* Linn. AR. erect or climbing shrubs. Usually solitary, 2-leaved, or terminal. 6 petals, valvate. Petals 6, usually solitary, or open in bud, sometimes the inner series 0. Stamens numerous, cuneate; the anther-cells linear, apex of contracted or rounded; dehiscence extrorse. Carpels many; ovules 2-8 in each. Fruit of many ripe carpels, usually galled and constricted between the seeds.

**Petals 6, 2-seriate:**

Climbing; outer petals under 1-5 in. long; peduncles 2-fld., short, 6 petals, in long. *Dmodii.*

Outer petals over 2 in. long; peduncles 1-nU, slender, from 1.5 in. long...*discolor.*

31. *Alar* glabrous climber.

*Unona* *Discalis* Vahl; F. I. ii. 669; F. 33. i. 1.59.

**Vvaria cordifolia** F. I. ii. 652.

C-Bengal; Orissa; Chittagong.

A spreading branching shrub.

32. *Unona* *Longiflora* Roxb.; F. I. ii. 668; F. B. I. i. 61.

(Chittagong.

A slender tree.

18. *Polyalthia* Bl.

Flowers solitary, few or many, in axils of fallen leaves, or on woody tubercles, or extra-axillary. Wals 3, valvate or sometimes subimbricate. Petals 6, 2-seriate. Stamens numerous, cuneate, anther-cells remote; dehiscence extrorse. Petals many; style usually oblong; ovules in each 1-2, basal or subbasal ascending. Fruit of berry-like 1-seeded ripe carpels.
Leaves narrow-lanceolate, apex tapering, margin undulate; petals ovate, 75-1 in. long; carpels fleshy, black, 75 in. long, exceeding stipe.

Leaves ovate-oblong, apex acute, margin not waved; petals 1-1.25 in. long; carpels fleshy, orange, 1-5 in. long, equalling their stipe.

- Branches and leaves beneath pubescent; flowers few on woody tubeicarpels ovate, 5 in. long; carpels spherical:


Planted, especially as an avenue-tree, in C. Bengal, Tirhut.


34. POLYALTHIA SIMIARUM Benth. & Hook. f.; F. B. L 63.

Chittagong; Orissa, Khurda; N. Bengal, Duars.

A tree. Vernac. Boga-kainla (Duars) ; Vriya Mong.


Behar; Chota Nagpur; W. Bengal, common; C. Bengal, only in thickets near villages.


Behar; N. and W. Bengal, common; C. Bengal, occasion.


19. Mitrephora Bl.

Trees; leaves leathery, strongly nerved, plicate in bud. Flowers hermaphrodite or sometimes 1-sexual, terminal or lateral. Sepals 3, orbicular or ovate, ovate thin, the veined inner thicker, clawed, vaulted, connate. Stamens numerous, oblong, obovate at apex; anther-cells dehiscence extrorse. Carpels many, oblong; style oblong or clavate.
ASOSAVK.X.  

furrowed on inner face, ovules 4 or more, 2-seriate on the ventral suture.  

carpels.  

Fruit of stalked or subsessile globoso or ovo  

37. TRKPHORA TOMENTOSA Hook. f. & ThoiUS. J F. B. I. 1-16.  

Chittagong.  

A. tree.  

20. Melodorum Dunal.  

^hru^, climbing; ««„«, with strong parallel nerves from the in  

(*) *Wo^ers terminal, axillary, or leaf-opposed, solitary,  

nt^ or Prolate, 3-gonous in bad. Sepal^ 3, valvate, conal,  

^W o W ^ Peto» » 6, Leriate, valvate, outer subonvex or  

S^lar^eer triqnetrous above hollowed below on the inner face.  

mucous; anther-oelkcontiguous; dehiscenceextrorse;  

top o. Conneo •ve truncate or rounded. Carp^s many; style  

* S ; ovules ta each 2 or more. Fruiti of berry-like ripe  

Fowers 1-25 in. long, axilhuy or in terminal WMM.  

P^als oblong-acuminate, tomentose outside, hoary.  

Flowers silky outside, faintly puberulous.  

38. MELODORUM RUBIGINOSUM Hook. f. & Thorns.;  

B: L i- 

Chittagong.  


MELODORUM POLYANTHCM Hook. f. & Thorns.;  

C^ittagou.  

A large climber.  

21. Anona Linn.  

^rfs^ or sh^bs. irfcwar. solitary or leaf-opposed.  

W^ or Sh^bs. irfcwar. solitary or leaf-opposed.  

the A^ Smaj^ 7 6, 2-seriate, the inner much smaller than  

^ser W 3 th the ^ 6, 2-seriate, the inner much smaller than  

<rries absent, the outer thick.  

contiguos.  

««. numerous; anther-cells narrow.  

Style K^sh J 10 P of connective ovoid. Carp^s many.  

ovules solitary.  

Fruit a many-celled globose  

class of confluent ripe carpels.  

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Leaves usually obtuse; peduncles generally solitary; fr. ovate oblong with projecting convex ovoid areoles.

Leaves acuminate; peduncles generally 2-4 together; fr. globose with flat 5-corneled areoles.

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.

Near villages, planted and oftener self-sown.
A small tree. Santal. Gom; Beng. Nona.—Heart; Custard Apple of English in West Indie.

Order Y. MENISPERMACEA.

Shrubs or undershrubs, climbing or twining rarely sal. leaves alternate, entire or lobed, usually palmatifid; stipules 0. Flowers 1-sexual dioecious, small or sessile, sometimes 3-bracteolate, in racemes, cymes or fascicles, Disk 0. Sepals 6 (rarely 1-4 or 9-12), almost always 2-seriate, the outer whorl often minute. Petals 0, 6 or 9-12, free or connate; Stamens hypogynous, 1 opposite each petal; filaments free or connate; anthers usually adnate; dehiscence longitudinal, extorse or laterally introrse; rudimentary carpels minute or 0. Staminodes 0 or 3, Carpels 3 (rarely 1, or 6-12), free; style terminal, divided; ovule 1 or rarely (Fibraurea) 2, on the ventral s\wedge^c, style-scar. Fruit of drupaceous carpels with a subterminal or (from excentric growth) amphitropous rarely anatropous. Seed campylotropous, hooked or reniform; often intruded in the concavity; albumen ruminate or scalariform; embryo small or large, curved or rarely straight.

* $ stamens connate:—[p. 207]
* f 3 anthers G; f 0 perianth-segments all free:—[p. 207]
* J 6 carpels 3, accompanied by staminodes:—[p. 207]
* $ petals 6; sepals 6; staminodes 6
* $ petals 0; sepals 6; staminodes 9
An « nirta.i MEMSPEL MACEA.

Stephania.  
< 4 carpels 1, staminodes 0; petals 3-5; sepals 6-10; petals 1-5; sepals 3-5 [p. 206].

Cissampelos.  
< 4 anthers 4; petals connate 4; sepals 4; petals 1; sepals 1 [p. 206]

Petals 6:
* anthers 4; petals connate 4; sepals 4; petals 1; sepals 1 [p. 206]
* Petals 6:
* sepals 6:
* anthers 9

Pycnarrhena.  
< 4 anthers 6; petals connate 4; sepals 4; petals 1; sepals 1

Tinospora.  
< 4 carpels 3, styles forked
< 4 stamens with thickened apices, anthers dehiscing obliquely;
* carpels 3, styles forked

Cocculus.  
< 4 carpels 3-6, styles cylindric
Carpels in male 3, rudimentary; stamens subcylindric, anthers dehiscing vertically; carpels 9-12, styles subulate

Tiliacora.

Tiliacora.  
< 4 carpels 9-12 5 4 anthers 6, bursting obliquely

Antitaxis.

28 Parabaena Miers.  
A climber with milky juice. Flowers in axillary dichotomous clusters. Sepals 6, subequal. Petals much smaller.

Anamirta Colebr.  
A climbing shrub. Flowers panicled. Sepals 6 with 2 adpressed bracts. Petal* 0. * Anthers sessile on a stout column,
dehiscing transverse. ? Staminodes 9, clavate, subulate, reflexed.

ARAB^NA SAGITTATA Miers; F. B. I. i. 96.

Chittagong.

A- climber with milky juice, and cordate or sagittate leaves.

23. Anamirta Colebr.

Anamirta Colebr.  
A climbing shrub. Flowers panicled. Sepals 6 with 2 adpressed bracts. Petal* 0. * Anthers sessile on a stout column,
derhiscing transverse. ? Staminodes 9, clavate, subulate, reflexed.

ARAB^NA SAGITTATA Miers; F. B. I. i. 96.

Chittagong.

A- climber with milky juice, and cordate or sagittate leaves.

23. Anamirta Colebr.
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**JIENGAL JPLAXT8.**

Globose, surrounding the intruded pericarp; albumen horny; embryo curved, cotyledons thin.

43. **ANAMIRTA COCCULUS W. & A.; F. B. I. i. 98 ; E. D.-Memispernum Cocculus F. I. iii. 807.**

Orissa.

A climbing shrub, with ovate, cordate leaves.

Ktkiniiiri.

24. **Stephania** Lour.

Climbing shrub; leaves usually peltate. Flowers in umbellate cymes. Sepals 6-10, free, ovate or obovate, 3-5, obovate, fleshy. Anthem 6, connate, encircling the staminal column; dehiscence transverse. 9 Sepals o • as in *. Staminodes 0. Carpel solitary, style 3-6 parts, drupe-like, glabrous; endocarp compressed, horses tubercled on the back, hollow and perforated on the sides almost annular; cotyledons long, slender.

44. **Stephania Hernandifolia** Walp.; F. B. I. i. 103 ; E. P.-C. Caapeha F. I. iii. 842.

Common in hedges and thickets.

A slender climber with somewhat peltate leaves. A'kanadi, nimnkha.

25. **Cissampelos** Linn.

Shrubs, suberect or climbing; leaves often peltate, cymose. Sepals 4, rarely 5-6, erose. Petals 4, connate, 4-lobed cup. Anthers 4, connate, encircling the staminal column; dehiscence transverse. Flowers crowded in axils of leafy bracts. Sepals 2, petals 0; ovate, 4-nerved, adnate to the bracts. Stanrinol.; CarpeZ 1; style short, 3-fid or 3-toothed. Fruit drupeaceous, ovoid, style-scar subbasal; endocarp horseshoe-shaped, pressed, tubercled on the back, sides hollowed. Seed cup embryo slender with narrow cotyledons.

45. **Cissampeilos Pareira** Linn.; F. B. I. i. 103 ; E. P.-C. Caapeha F. I. iii. 842. C. convolulacea F. I. #. 842.

Behar; W. Bengal; Chota Nagpur.

A climbing plant with generally peltate leaves; the fen racemes with leafy imbricated bracts. Santal. Malla; Benjr. Ekleja.
26. Pycnarrhena Miers.

Shrubs, suberect or climbing. Flowers axillary, fascicled or with 3 bracts, inner larger orbicular. Stamens 9, filaments very short; anthers dehiscence transverse. Flower unknown. Fruit oblong, slightly gibbous; style-scar lateral; onn. Seed slightly concave ventrally; albumen oblong, very thick.

27. Tincspora Miers.

Panicles in axillary or terminal racemes or smalle, inner membranous larger. Petals 6, filaments free, tips thickened; anther-dehiscence oblique. Staminodes 6, clavate. Fruit of 1-3 drupes convex above, flat beneath. Seed grooved ventrally or curved round the endocarp; albumen ruminate below; cotyledons leafy.

47. Tinospora Tomentosa Miers; F. I. i. 96. Menispernum tomentosum F. I. iii. 813.

in hedges and thickets, rare.


in hedges and thickets everywhere, very common.

28. Cocculus DC.

Shrubs, suberect or climbing, rarely suberect. Flowers axillary, fascicled or 2-seriate, outer smaller. Petals 6, smaller, auriculate. Stamens 6, embraced by the petals; anthers dehiscence transverse. Staminodes 6 or 0. Carpels
BENGAL PLANTS.

3-6, styles usually cylindric. Fruit of laterally drupes; endocarp horseshoe-shaped, keeled and tubercle sides hollowed. Seed curved; albumen fleshy; embryo with linear cotyledons.

49. COCCULUS VILLOSUS DC.; F. B. I. i. 101; E. 1452.

Menispermum hirsutum F. I. iii. 814.

Behar; W. Bengal; Chota Nagpur: common ground.


29. Tiliacora Colebr.


? Carpels 9-12; styles short subulate, f w't of obovo celled subcompressed drupes with subbasal style-scar; thin, obscurely ribbed, laterally grooved. Seed hooked, oily, ruminate; cotyledons linear, fleshy.

50. TILIACORA BAGBMOSA Colebr.; F. B. I. i. 99; E. V.

Menispermum pohjcarpum F. I. iii. 8

In hedges and thickets everywhere, but esp C. and E. Bengal.


30. Haematocarpus Miers.

A strong glabrous climber; leaves very coriaceous, Flowers in axillary racemes or panicles. Sepals 9-12, bracts, large. Pefa's 6, minutely auriculate at the base. anther-cells 2, discrete, connective hood-like dilated; dQ oblique. Rudimentary carpels 3, minute. Sepals 6, small basal bracts. PefaZs 6, greenish, opposite the sepals. Carpels 3, 6; stigmas ligulate, reflexed. Fruit of 1-4 large ovoid drupes with blood-red juicy flesh, style-scar subbasal; albumen very large, with thick semicylindric cotyledons.

51. HDEMATOCARPUS 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 obovate, the 4 inmost large imbricate orbicular. Petals 1, stamens 4, filaments clavate; anthers 1-celled, sub- Woboea, dehiscence transverse. ? ^m^rs unknown. Fruit* subglobose drupes with ventral style-scar; endocarp thin, breniform. Seed subglobose, ventrally concave; albumen Cotyledons oblong, slightly incurved, thick, semicylindric.

\[ {\text{ANTITAXIS CALOCARPA Kurz.}} \]

Chittagong.

A. shrub.

Order YI. BERBERIDE JE.

, ^\text{ftbg}, armed or not, sometimes climbing, leas often herbs; usually scaly. Leaves alternate, simple or compound; stipules rare (Berberis sometimes). Flowers regular, often globose, yellow or white, hermaphrodite or 1-sexual, in panicles or racemes or solitary. Diak Q. Perianth of similar sepals and petals hypo- s u s, 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 evo late; dehiscence longitudinal, extrorse or lateral, or by valves, revolute or ascending. Carpels 1 or 3, rarely 6-9, free, oblong, style short, stigma peltate or oblong or conical; ovules 2 or more, erect, or 2-many-seriate on the ventral suture, or many- *iate or scattered on the carpellary wall, anatropous with a \(**ka! raphe rarely orthotropous. Fruit of berry-like fleshy, or dry dehiscent, or capsular dehiscent ripe carpels. Seed crusta- membranous or fleshy; albumen firmly fleshy; embryo elongated.

32. Berberis Linn.

\[ {\text{Berberis}} \]

\[ {\text{with yellow wood}} \]

\[ {\text{leaves pinnate or simple and then}} \]

\[ {\text{in the axils of 3-5-partite spines. Flowers regular,}} \]

\[ {\text{hermaphrodite, yellow, solitary fascicled or racemoBe. Sepals 6,}} \]

\[ {\text{Petals 6,}} \]

\[ {\text{ulate, imbricate, with 2-3 adpressed bracts. Petals 6,}} \]

\[ {\text{2-seriate,}} \]

\[ {\text{}} \]
imbricate, with often 2 basal glands inside. Stamens 6, anther-cells opening by recurved valves. Ovary simple, peltate, sessile or with a short style; ovules few, erect basal, berry-like, few-seeded.


**Order YH. NYMPHÆACEÆ.**

Herbs, perennial, aquatic; leaves usually floating rarely on floating stems, often peltate, in bud involute. Flowers solitary on naked scapes. Disk fleshy and enveloping the eml* & sometimes also adnate to the tubular base of perianth, " Perianth of many spirally imbricate segments, gradually from sepals to petals and petals to stamens or the whorls with sepals 3-5, petals 8-5 or more, and stamens 6-many, hypogynous, or with the inner or all perigynous, le & epigynous, on the disk. Stamens with filaments continued W connective; anthers erect with adnate cells; dehiscence longi" intorse or extorse. Carpels 3 or more in one whorl, free, often adnate to disk as a many-celled ovary, tardy (Neh′ & ) discrete scattered on the top of the torus; styles as tattf carpels with stigma decurrent or peltate; ovules many or scattered on the carpellary wall, or solitary pendulous from a carpel, orthotropous or anatropous. Vruit of indehiscent 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 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 1 T T 18stameDS half - "P" - inserted on the disk v*i<**S and confluent with the carpels; plants unarmed...........................N y m p ^ SepalsJohn ′, be OW and confluent with the disk in which the c « P * « enclosed, petals and stamens superior; plants armed with spines Euryals.

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, eddged on long-radical scapes. Sepals 4, adnate to the disk. Petals many-seriate, inner successively wormed into stamens, all adnate to disk. Stamens numerous; Petaloid; anthers small linear; dehiscence intorse. Stigma many, 1-seriate, sunk in the fleshy disk and forming with any-celled ovary crowned by the connate radiating furrowed ovules numerous, anatropous. Fruit a spongy berry, ing under water. Seech very small, enclosed in a fleshy

Leaves 8h m, sparsity toothed; sepals ribbed; anthers without appendages; stigmatic rays with clubbed appendages:—

Flowers white. .......................... .......................... .......................... ..........................

Flowers rose or 14dl """"""""""""""""""""""""""""""""""""""""""

Leaves entire of obtuse petals; sepals many-veined but not ribbed; anthers with 10s appendages; stigmatic rays ending in short horns without appendages:

Flowers pale blue, 1-2 in. across. ........................................... .......................... ..........................

Flowers darker blue, 4-5 in. across. ........................................... stellata var. major.

NYMPH^EA LOTUS Linn.; F. H. I. i. 114; E. D. N. 200.

NYMPH^*A RUBRA Roxb.; F. I. ii. 576.

Less common than the white-flowered plant though equally widespread. Beng. Rakto-kambal.

NYMPH^*A STELLATA Willd.; F. I. ii. 579; F. B. I. i. 114; E. D. N. 209.


Less common than the paler-flowered variety. Beng. Bara nil-padma.

34. Euryale Salisb.

Densely prickly aquatic herbs, with thick rootstock; leaves lar, corrugate. Flowers partially submerged. Sepals 4, inserted on the edge of the thalamus above the carpes, numerous, 3-5-seriate, shorter than the sepals.
Stamens numerous, many-seriate, fascicled in bunches. Filaments linear. Ovary 8-celled, sunk in the dilated ovary of the dilated thalamus; stigma discoid, depressed, concave; ovules few. Fruit a spongy berry, armed externally and crowned with the persistent sepals. Seeds 8-20, with a pulpy arillus.

57. EURYALE FEROX Salisb.; F. B. I. i. 115; E. 115.

Anneslia spinosa F. I. ii. 573.

Euryale, in jhils, very common; Tippera; Chittagong, rather rare.

A densely spiny aquatic herb. Hindustan and Bengal. Uriya Kanta-padma.

35. Nelumbium Willd.

A large erect aquatic herb with milky juice and stout rootstock; leaves of young plants floating, of older plants raising the water, peltate. Flowers large. Sepals 4-5, inserted in the scape, passing into petals, caducous. Petals many, hypogynous, passing into stamens, caducous. Stamens many-seriate, hypogynous, caducous; anthers with a appendage, filaments many, each 1-celled, discrete, in the flat top of the obconic fleshy thalamus, fixed in the cavities; style very short, exserted, stigma terminally 3, ovules 1-2, pendulous. Fruits of ovoid ripe carpels, loose in the cavities of the enlarged spongy thalamus; pericarp long-crenated. Seeds filling the carpels, testa spongy, without albumen; thick fleshy.

58. NELUMBION SPECIOSUM Willd.; F. I. ii. 647; F. E. D. N. 39.

Everywhere in ponds.

A large water-plant; leaves peltate, floating plants. There are two forms, one with pink flowers, usual; the other with white flowers, usual.

Hindustan, Kanwal; Bengal and Uriya Padma.

Ordo YIII. PAPAYERACEAE.

Herbs, perennial or Annual, rarely shrubs; juice violet or coloured. Leaves radical or alternate or both; stipules. Flowers often showy, regular, hermaphrodite, usually nodding in bud. Disk 0. Sepals 2, rarely 3, hypogynous, imbricate,
PAPAVRJUCEJE.

Petals 4, rarely 6, 2-seriate, very rarely more and several, caduceous, large, crumpled, very caduceous. Stamens many, antepos. Seriate or spiral, hypogynous; filaments slender, innate; dehiscence longitudinal, lateral. Carpels 2 or more, in a superior 1-celled ovary with parietal or more ventral Placentas, or 2-celled (Glaucom) by a pseudo-Jum or 2- or more-celled from intrusion of the placentas as far as axis; Style 0 or short rarely long; stigmas always alternate with and apparent or opposite the placentas; ovules many-seriate parietal, rarely (Bacon) solitary, anatropous with a lateral raphe. Seeds completely or partially dehiscent by valves or on a short distinct style. 

36. Papaver Linn.

Papaver Linn.

A perennial herbs with milky juice; leaves lobed or cut. Sepals 2, rarely 3, caduceous. Petals 4, 6 or 2-seriate, caduceous. Stamens numerous, hypogynous. United in a 1-celled ovary with 4 or more intruded Placentas; several-celled by complete intrusion of as far as axis; style 0, stigmas connate as a discoid or star with rays composed of conjoint half-stigmas opposite each Placenta. Fruit a short, usually truncate capsule, opening valves below the persistent stigma.

37. Argemone Linn.

Annual herbs, erect, prickly; leaves variegated, lobed, lobes orenscent. Flowers in few-flowered cymes, with leafy bracts. Sepals very rarely 4, caduceous. Petals 6, very rarely 8,
2-seriate, caducous. *Stamens* numerous. *Carpels* united, 1-celled ovary with 3-6 parietal placentas; style distinct, stigmas connate, lobes siibradiating alternate with placentas, the fol 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. 1351. E. D. M. 1351.

Everywhere in waste places.

A prickly annual with yellow juice, yellow flowers; prickly leaves with white veins. *Beng.* Bara shu-K Santal. Gokhula janum.

Order IX. FUMARIACEAE.

Herbs, annual or perennial; juice watery. *Leaves* alternate or opposite, usually much divided; stipules 0. *Flowers* regular, hermaphrodite, usually in racemes. *Dish* 0. *Sepals* 2, small, scale-like, caducous. *Petals* 4, 2-seriate, outer large or both gibbous or spurred, inner always like each other but usually very unlike outer, narrower, erect with often cohering *Stamens* rarely 4, free, opposite the petals, usually diadelphous or both; 2 phalanges opposite the outer petals, each phalanx with 2-celled and 2 lateral 1-celled filaments that are free only in an apex; dehiscence longitudinal, lateral. *Carpels* united, 1-celled ovary with parietal nerviform placentas of one may (Fumaria) be sterile; style short or long, stigmatic or lobed; ovules 2-many, amphitropous, 1-2-seriate on placentas, very rarely solitary on each or on only one part of the carpel. *Fruit* a 2-valved many-seeded capsule, or indehiscent 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, hermaphrodite. *Sepals* 2, small, scale-like, caducous. *Petals* 4, 2-seriate, the 2 outer dissimilar, anterior connate posterior gibbous.
or spurred at the base, the two inner lateral simile, long-clawed, k"eeled, with usually cohering tips. *Stamen*, diadelphous in antero-Posterior bundles,"each with a central 2-celled and two lateral Celled anthers. *Carps* 2, connate in U-celled ovary with usually or % 1 parietal fertile placenta; style filiform, stigma entire or lightly lobed; ovules normally 1 near base of fertile placenta. 'ruit a small globose indehiscent 1-seeded nutlet.

61. *FUMARU PARVIFLORA* Laink.; *F. I. iii. 217*; *F. B. I. i. y*!

In fields and gardens, not uncommon.

Order X. CRUCIFERÆ.

*H<*bs, annual or perennial, rarely undersbrubs; juice often angent. *Leaves* radical in a rosette and cauline alternate; *Puleg* 0. *Flowers* in racemes, rarely solitary axillary or on scapes. *JHnh* with 4 glands opposite the sepals, or 0. *Sepals* 4, *imbricate, hypogynous, the lateral pair opposite the placentas of *Petals* 4, free, hypogynous, set cross-wise. *Vtamena* 6, rarely 2 or 1, or many; 2-seriate, outer whorl of 2 oppos-ite the lateral sepals, inner of 4 with longer filaments in opposite 1** alternate with outer; anthers basifixed, oblong rarely linear *contorted, 2-, rarely 1-celled; dehiscence longitudinal, lateral. *W»* 2, united in a superior ovary 2-celled by a placental replum, L 2-celled, or with superimposed cells; style short or 0, stigma *Ple or with 2 lobes opposite the placentas; ovules 1-Â oi' 2-Beriate, on opposite sides of the replum, if present, on P 1? à êtal P^entas, rarely solitary erect, campylotropous or cl? wûP0Us with *raphe* ventral. *Fruit* a 2-celled 2-valved Psule with deciduous valves and persistent replum and placentas, or transversely jointed or indehiscent. *Seed* small, albumen 0; *embry* with large cotyledons foliaceous in germination, radicle incised, or on the back of one or accumbent on edge of both *cotyledon*.
Pods almost cylindric; seeds globose, 2-seriate or irregularly 1-seriate; flowers yellow ........................................

Pods flattened; seeds compressed, 1-seriate; flowers yellow ........................................

{Pods with a seedless indehiscent beak projecting beyond the valves; sepals pouched at the base; cotyledons longitudinally incipient:—[p. 217]

Pods narrow cylindric or turgid, beak cylindric or conical, 1-seriate; flowers yellow or yellow with green veins ........................................

Pods turgid, beak flattened; seeds 2-seriate; flowers yellow with lilac veins ........................................

fPods broad, short; sepals not pouched at base:—[p. 217]

Pods globose; seeds many, small, compressed; cotyledons accumbent; flowers (in our species) yellow ........................................

Pods flattened:—

Pods compressed from back, parallel to expanded few, compressed, cotyledons accumbent; flowers (in Ygtuif' i'dro *

• 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 incipient. Thila 1

Seeds in each cell 4-6; cotyledons accumbent ...........

*Pods not dehiscing:—[p. 217]

Pods short globose, 2-celled; each cell 1-seeded; sepals Bpre&ing> aOt

pouched at the base; white flowers and pods both very small

Pods elongated, terete, hollow or transversely septate; sepals el'in

pouched at the base; flowers yellow white or lilac with purple and pods large ........................................


Herbs, terrestrial or aquatic, usually branching, glabrous or 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 long or 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-seriate; cotyledons accumbent.
CRUCIFERM.

Pods short; bracts nearly longer than the pedicels; bracts ovate; pedicel shorter than the pedicels.

Flowers without bracts; bracts ovate, hardly longer than the pedicels.

**Nasturtium**

- **Palluare DC.** F. B. I. i. 133.
- **Variare** rare; N. Bengal, Malda; C. Bengal, 24-Parguna.

**Sinapis arvensis** F. I. i. 134.

- Everywhere, common.

**Cardamine** Linn.

- Small herb, annual or perennial, glabrous or slightly pubescent, white or purple tinged, leaves entire, rarely pinnatifid to -sect. Flowers yellow. Sepals equal at the base, clawed. Capsule narrow linear, compressed, distinct, valves subelastics in 1 or 2, notched at the base. Stigma simple or 2-lobed. Cotyledons incumbent.

**Brassica** Linn.

- Often a wood rootstock, often biennial; glabrous or pubescent, rarely entire. Flowers greenish or white. Capsules elongate, terete or angular, with a seed-beak projecting beyond the convex or slightly nerved valves; replum membranous, in cultivated forms partially or completely keeled or ensiform; stigma truncate or 2-lobed. Cotyledons incumbent.
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 base persisting to form a loose cabbage, stem-leaves not lyricately lobed, margins fine-crenate.

Leaves of the stem auriculate and stem-clasping.

Leaves with hairs, at all events when young, and densely covered with a pale greyish bloom:

Roots stout spindle-shaped; pods slender, beaded opposite.

Stems elongating from the commencement of growth; leaves at stem base quickly withering, most of the stem-leaves lyricately lobed, margins fine-crenate.

As preceding but smaller in all its parts and feral., juncea var. juncea var. jucunda.

Leaves of the stem auriculate and stem-clasping:

Leaves with hairs, at all events when young, and densely covered with a pale greyish bloom:

Roots stout spindle-shaped; pods slender, beaded opposite.

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Leaves with hairs, at all events when young, and densely covered with a pale greyish bloom:

Roots stout spindle-shaped; pods slender, beaded opposite.

Stems elongating from the commencement of growth; leaves at stem base quickly withering, most of the stem-leaves lyricately lobed, margins fine-crenate.

As preceding but smaller in all its parts and feral., juncea var. jucunda.
A cold weather crop in all the provinces. *Hind.* Sarson; *Beng.* Swet sarisha. The Sarson or Indian Colza crop.

With two races of Sarson, viz., Natua with erect pods, and Ulti with 2-valved Pods and a complete replum, and that with 3-4-valved Pods and the replum complete or absent. The normal 2-valved Sarson is, in part, *B. campestris* subsp. *Napus* of the F. B. I., and *U. glauca* of the F. I. The 3-4-valved Natua Sarson is not alluded to in the F. L. The 3-4-valved Ulti Sarson is neglected in both works; its occurrence is of fact rare, and its cultivation is confined to Northern and Eastern Behar. The 3-4-valved Ulti Sarson is *B. trilocularis* of the F. I., and *Sinapis trilocularis* of the F. I.

**42. Eruca Linn.**

*Rucu sativa* Lamk.; F. B. I. i. 158. *Brassica erucoides* L. iii. 117. A cold weather crop in all the provinces. *Vernac.* Tori (Tirhut, Behar) Latni (Chota Nagpur); Sarisha (Beng.). The Tori or Indianrape crop; possibly the same as the Summer Rape of Europe.

**43. Cochlearia Linn.**

*Chochlearia* Linn. Perennial, glabrous, often fleshy herbs; leaves entire or divided, often base-matting. *Flovers white, rarely yellow or xim t, corym- sprous, rarely on solitary scapes. Sepals equal at the base. Petals shortly clawed. Capsules*
BENGAL PLANTS.

[COchlea]

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. Alysium Linn.

Herbs or sin. hoary with small, wtf: SOT Scalo** "-" linear, entire. F short** with short "-" blade entire or 2-fld. turgid or flattened or obl. g; re membran. o'". Pejorated or entire; style short. 

71. A. J. ALYSSUM MAEITIMDM Linn.

In gardens, cultivated in the cold season, but occasionally earning up spontaneously on rubbish-heaps towards the end of the rains.


Tirhut; Behar; very rare in C. Bengal.

A weed of cultivation in the cold season. The "Shep

46. Leopodium Linn.

Herbs, often am pm 17. Thlaspi Linn. — F. B. I. i. 159.

73. T. UM SATIV™ Linn.; F. B. I. i. 159.

Plum narrow, membranous. Seeds solitary in Tirhut, Behar and N. Bengal, small annual herb. Vcrnac. HALim; aleveri.

43. SenebieraDC.

5 leaves entire or toothed, the upper

Pah SL Q. Caul.< Plum: al

Oblong, V' erect) e_ual at the base. Petals small. Capsules obcordate, compressed at right angles to

me mbrana. Ovate or boat-shaped, keeled, or winged; replum narrow, Cor. US, Stae short or long. Seeds 2 or more in each cell;

74. 3. LA HARPADARSE Linn. ; F. B. I. i. 162.

Ben. — Very rare.

jjet cultivation in the cold season.

49. Raphanus Linn.

Raphanus 1

w to ♀ tip notched or entire; valves boat-shaped, each cell. Cotyledon's incumbent, sometimes divided.

75. J. cotyledons incumbent or the embryo spiral.

Seed in garden ground and by roadsides, but apparently on J in C. Bengal; is especially common at Mutthah.

A small diffuse herb; of recent introduction to India.
filled with pulp between the seeds or open. Seeds _pendulous_.

76. **EAPHANUS SATIVUS** Linn.; P. I. iii. 126; F. B. I. i. 166f

A cold weather crop.

An annual herb. _Beng._ Mula. The Kadish.

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**Order XI. CAPPARIDEJE.**

Herbs or shrubs, erect or climbing, rarely trees. Flowers _regular_ or _irregular_; usually hermaphrodite, often showy, in terminal corymbbs, or axillary in fascicles, or solitary. _Disk_ tumid, _calyx-tube_, or 0. _Sepals_ 4 or 6 or 8, free or connate, _1-2-sefflate_, subequal or somewhat irregular, valvate or imbricate or outer on, 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 lateral; _Carpel* 2 or more, connate in a 1-locular ovary with 2-4 _placentas_, sometimes 2-8-locular from septa arising from the _placentas_; sessile or at the apex of a short or long _gynophore_; _style_ usually short or 0; _stigma_ depressed or capitate; _ovules_ in _many-seriate_; _dehiscence_ longitudinal lateral; _fruit_ a 1-locular elongated capsule, or berry-like, rarely drupaceous and indehiscent, and globular or oblong, _cylindric_. _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; _digitately compound_ with stamens 6. ................. _Gynandro*P*

Shrubs or trees with round or ovoid, berry-like, usually indehiscent fruit; _stamens_ many, rarely definite:—

Climbing shrubs with simple leaves and stipulary thorns; _sepals_ 4, imbricate, free; _disk_ 0. ................. _Capparis*

Trees with digitately trifoliolate leaves, "unarmed;" _sepals_ 4, open in bud, cohering below with a convex lobed disk. ................. _Cra*P.*
SO. Cleome Linn.

Herbs; leaves simple or digitately 5-9-foliolate. or purple, raceinose. Sepals 4, spreading. 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.

CLEOME MONOPHYLLA Linn.; F. I. ni. Behar; W. Bengal; Chota Nagpur.

A weed of fields and waste places. Santai. n

CLEOME VISCOSA Linn.; F. I. ui. 128; F. B. 1.1. 170.


CLEOME CHELIDONII Linn. £.; F. I. in-

A herb.

31. Gynandropsis DC.

G." In<ndropsis,} CAPPARIDEÆ.

SibTS
52. Capparis Linn.

Trees or shrubs, erect, decumbent, or climbing, usually stipulary thorns; leaves simple, rarely 0. Flowers usually showy. Sepals 4, free, 2-seriate, imbricate, oval, valvate. Petals 4, sessile, imbricate. Stamens numerous, rarely definite, inserted directly on the thalamus on the gynophore. Ovary stipitate on a long gynophore, 1-4-celled, sessile; ovules many on 2-6 parietal placentas, indehiscent, rarely valvular dehiscent. Smfa many, pulp; cotyledons convolute.

Flowers few:—

Flowers supra-axillary, 2-4, the serially superposed pedicel length; leaves elliptic-oblong to broad-ovate, young show rusty pubescent .................................................................

Flowers axillary, usually solitary:—

Leaves acute, broad-ovate to lanceolate, glabrous; flowers 1-3 on a short shoot .................................................................

Leaves orbicular, floccose with white pubescence; fruit dehiscing; flowers always solitary ............. spinoact var.

Flowers numerous, in umbellate corymbs; leaves glabrous:—

Corymbs simple, sessile or short-peduncled; stamens many large as a pea .................................................. (about 8)*

Corymbs arranged in large terminal panicles; stamens large as a cherry .................................................................

81. CAPPARIS HORRIDA Linn. f; F. B. I. i. 178; B. ^

C. zeylanica F. I. ii. 567 (not of Linn.).

In thickets and hedges, everywhere.


82. CAPPARIS ZEYLANICA Linn.; F. B. I. i. 174; E. ^

C. acuviinata F. I. ii. 566.

S.-W. Bengal and Orissa, on dry stony ground.


83. CAPPARIS SPINOSA Linn. var. LEUCOPHYLLA HOO.

Thoins.; F. B. I. i. 173.

Tirhut, Bettiah.

A branched shrub, with prostrate or trailing branches.

Vernac. Kabra.
VIOLACEÆ

84. CAPPARIS SemRU Lhm... F. L u. 568; F. » I. i. 177; E D. o. 427.

Hedges and thickets, general; Sundribuns, sea-face.

A rather extensive wiry climber. fœ≤≤7- Kanta guv k

CAPPAES FLOMBODA Wight; F. B. I. i. 177.

Orissa.

A large woody climber.

S3. Cratseva Linn.

Tr...; bun digitally 3-foliolate. »«««r « large, 3 f. ow or
narrow A-l. ol.gamouS. 4«1» 4, oahoring below with the
convex **• Al «fe 4, long-clawed, open in bud. Stamens
numerous; fi kments 3^n b elW to the base of the gynophore,
free above. 0 any stipitate on a 1011g gynophore, 1-celled; S^t^v
seamele; ovules nian y on 2 a rietal p·cents... FrelH t hard,
hisent

* Seeds imbedded in pulp.

J|JJ> ovate-lanceolUe, abruptly acuminate; fruit globose ...religiosa.

* w^UncedUto, gradually tapering; ftnlto j^ rel var. Nureala.

85. OBAT«a SELIOIOA Forst.; F. 35. I. I- " 2; B. D. O. 2039.

G'H>P«<INS trifoliata F. I. ii. 571.

Generally planted.

88/2. 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. VIOLACEÆ

Herbs 01- sh1•11W leaves ille mate, rarely opposite, entire or
rarely PUnxatissect; stipules leafy or small, often decduous.

^en regular or irregular, axillary, solitary or in a ^ g o f
^1 o d cymes, rareiy £n<M>; pedicels usually 2-bracteoWJ

?? 0- SepaU 5, persistent, equal or unequal, imbiate. P ^

* Pogynous or slightly perigynous, irregular, less, "V

y< usually contorted-imbriate. Stamens 5 perfect, hJP0^nos

Ot ^ghtly perigynous; filaments short or 0, com.eect.ve usua

X
BENGAL PLANTS.

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wide and often produced; anthers erect, connivent or connate around the ovary, cells introrse; dehiscence longitudinal or rarely by apical pores. \(^{n}^{n}^{n}\) 8, rarely 4-5, connate in a sessile superior ovary with parietal placentas; style simple; stigma capitate, truncate, or cup-like, entire or lobed; ovules many, rarely 1-2, on the parietal placentas, anatropous. Fruit a 3-valved, rarely 4-5-valved capsule, very rarely berry-like and indehiscent. Seeds small; albumen fleshy; embryo straight, axial.

87. IONIDIUM SUFFRUTICOSUM Ging.; F. B. I. i. 185. Viola suffruticosa F. I. i. 649.

Everywhere in grassy places.

A small branching perennial, with rose-coloured flowers. J**ng. Nubora; Hind. Ratanpuras; Santal. Tandi sol, bir surai mukhi.

Order XIII. BIXINEJE.

Trees or shrubs. Leaves alternate, simple, usually toothed; caducous or evergreen. Flowers regular, hermaphrodite or 1-sexual; 8, imbricated or contorted, perigynous, usually many; anthers 2, basi or 4, apical or connate; dehiscence by pores or anatropous. Carpels 1-locular, rarely more-locular, placentas parietal or sometimes united or free; ovules 1-4, rarely numerous, anatropous. Fruit dry or fleshy, dehiscent with or without a middle septum, or indehiscent.
Cochlospermum] BIXINEÆ. 229

Petals 0; anthers opening by slits; flowers very small, usually dioecious:—

Leaves deeply digitately lobed or divided; capsule smooth, 3-5-valved; seeds covered with cotton; flowers large, yellow, appearing before the leaves,...........................................Cochlospermum.

Leaves entire; capsule softly prickly; seeds covered with dye-fieldin 8 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 some species) never more than twice as long as broad. Flacourtia.

Ovary 1-celled, with parietal placentas; branches rarely armed; leaves of some species thrice as long as broad..................Xylosma.

Sepals rather small, usually dioecious..................Taraktogenos.

Sepals rather large; with basal ciliate scales; flowers conspicuous, dioecious; opening longitudinally; ovary globose, 1-celled ....Chaulmoogra.

55. Cochlospermum Kunth.

Leaves digitately divided. Flowers very large, yellow, hermaphrodite, man


W. Bengal; Behar; Chota Nagpur; Orissa: elsewhere planted.

56. **Bixa** Linn.

Trees, with simple leaves digitately nerved and slightly or not lobed. Flowers in terminal panicles, white or rose, herinaph... Sepals 5, imbricate, deciduous. Petals 5, contorted in Stamens numerous; anthers opening by terminal pores. Ovary 1-celled, placentas 2 parietal; style slender curved; ovules 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; B. 523.

Cultivated everywhere, but in Bengal propitiously. Generally wild in village jungles. A small, evergreen American tree or large bush yielding the dye yielded by the pulpy testa. The cultivated species has often rose flowers; the flowers of plants that are wild are almost always white. Vernac. Latkan (genera... Kong kuombi (Santal); Powasi (Chittagong) ); (Orissa). The Anatto.

57. **Flacourtia** Commers.

Trees or shrubs, often spiny; leaves simple, toothed or crenate. Sepals 4-5, small, imbricate. Petals 0. Stamens numerous; versatile. Ovary 2-8-celled, on a glandular disk; styles 2, with stigmas notched or 2-lobed; ovules usually in pairs on the placenta. Fruit indehiscent with a hard endocarp; cells 1-seeded. Seeds obovoid with leathery testa; cotyledons orbicular.

Leaves oblong or oblong-lanceolate with acuminate apices, twice as broad; spines compound; fruits about the size of grapes... Cataphret. Leaves ovate, obovate, oblong or elliptic with blunt apices, less than twice as long as broad; spines simple; fruits about the size of currants... Thorns scattered, naked; styles usually united, lobes of stigma 3-4; berry when dried 5-7-angled; seeds 8-10:

Leaves glabrous above, glabrous or only hairy on the beneath. Ramontchi var. P[i,

Leaves often hairy above, always hairy, sometimes velvety beneath. Ramontchi var. occidentalis.

Thorns numerous, almost always bearing leaves and flowers; usually free, lobes of stigma 3-4; berry when dried 3-4-angled; seeds...
90. FLACOURTIA CATAPHRAC'TA Roxb.; F. I. iii. 834; F. B. I. i. 193; E. D. p. 603.

N. Bengal; E. Bengal; Chittagong; Tippera; la; blood; Talipatri; paniaonla.

91. LACOURTIA RAMONTCHI L’Herit. var. SAPIDA F. B. I. i. 193; E. I. P. 615. F. sapida F. I. iii. 835.

Behar; Cliota Nagpur, eastern districts; W. Bengal, common; C. Bengal, rather rare; Orissa.


Western Behar; Western Chota Nagpur.


LACOURTIA SEPIARIA Roxb.; F. I. iii. 835; F. B. I. i. 194; E. D. F. 624.

and E. Bengal, common; also Sundriabuns.


58. Xylosma Forst.

Trees or shrubs; leaves simple, usually serrate. Flowers small, 4-5 flowers. Sepals 4-5, small, imbricate. Petals 0. Stamens 5 anthers versatile. Ovary on a glandular disk, 1-celled. Petals often leathery testa. Fruit a globose 2-8-seeded berry. Seeds with leathery testa.

59. Taraktogenos Hassk.

Trees entire. alternate; stipules minute, fugacious. Leaves more or less dense, short, few-flowered, axillary cymes, sometimes hermaphrodite on the functional male trees, majority staminate only. Sepals 4 in decussate pairs, imbricate, round, concave. Petals 8 in 2 rows, smaller than Sepals; imbricate, each with a basal gland; glands less than half as large as Petals, fleshy, cuneate, often fringed, ridged and shallow. Stamens 20-32, anthers deeply cordate, i and V in structure. Sepals*, however, often only 3. Petals often
only 6. *Stamens*, when present, about 16. *Carpels* 4, connate, a 1-celled, elongate-ovoid, often sulcate ovary, divided above by 4 oblong, divergent, reflexed lobes, stigmatic on their inner placentas 4, parietal; ovules many on each placenta. *Fruit* globose or ovoid, with a hard fibrous or woody rind. *Seeds* with a thick firm testa; albumen copious, firm; embryo straight, with large, cordate, foliaceous, 3-nerved cotyledon.

94. TARAKTOGENOS KURZII King; E. D. G. 762.

Tippera; Chittagong.
A tree 40-50 feet high; yields the Chauhnoogva and Chaulmoogra oil of commerce. *Vernac.* Chaulmuogra (Chittagong).

60. Chaulmoogra Illox.

A tree with large, entire, glabrous leaves. *Flowers* fascicled, axillary or on the stem and large branches below the dioecious. *Sepals* connate in a cup-shaped, valvately 5-toothed and irregularly opening persistent calyx. *Petals* 5, each with a ciliate scale., *Stamens* numerous; anthers basifixed, *Ovary* 0. *Staminodes* 10-15, villous. *Fruit* globose 1-celled, styles 5; stigmas large, cordate; ovules many, on 5 plicate placentas. *Seeds* obvoid, imbedded in pulp, with a tough, woody rind. *Seeds* obovoid, imbedded in pulp, with tough testa; albumen oily; cotyledons large, flat, fleshy, reniform, more or less excentric with radicle generally horizontal.


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 XIX. POLYGALACEAE

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* 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 anther cleft more often free, usually adnate to petals; less often free, usually adnate to petals; ovary, carpel generally 2-locular or rarely longitudinal, dehiscence apical by pores, rarely longitudinal introrse. Generally 2-locular or rarely longitudinal, dehiscence apical by pores, rarely longitudinal. Moosal, less often 3-5-locular superior rarely longitudinal and sometimes indehiscent 1-seeded, rarely scaly or 0; embryo straight, rarely scaly or 0; capsule. Seeds pendulous, usually fleshy, rarely scantly or 0; embryo straight, usually fleshy, rarely scantly or 0; embryo straight.

**Polygalaceae.**

**Herb**

- **Salomonia.**
  - **Salomonia oblongifolia** DC.; F. B. I. i. 207.

61. **Salomonia** Lour.

**Annual herbs,** leafy aild diffuse, or leafless and parasitic. **Salomonia** subequal, the lower pair larger than the others. **Salomonia** 3, adnate at the hood. **Salomonia** 4-5, the filaments in their lower half connate in one anther with porous dehiscence. **Ovary** 2-locular, with pendulous ovule in each cell. **Fruit** a laterally compressed capsule, opening loculicidally, margins toothed. **Seeds** minous, with a faint strophiole or naked.
Polygala Linn.

82. Polygala Linn. shrub. usually alternate, occasionally

Umer Oosule-

sheath the bases with the stamens larger than the others and the petals half inapart sheath; another

solitary, petalous, Fruit loculicidal capsule, with one seed in each cell. Seeds alburninous, almost always stropholous.

Calyx deciduous; keel petal not crested; bracts caduceus; strophiole 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 herbaraceous.

Racemes axillary or extra-axillary; bracts minute:

Stems woody below; wings obovate, membranous, petaloid, with rounded tips as often as entire. Sinus of petals larger than capsule. Styles few, with 2-locular ovule in each cell. Fruit loculicidal capsule, with one seed in each cell. Seeds alburninous, almost always stropholous.

Racemes dense-flowered, shorter than the leaves:

Stems woody below; wings obovate, membranous, petaloid, with rounded tips as often as entire. Sinus of petals larger than capsule. Styles few, with 2-locular ovule in each cell. Fruit loculicidal capsule, with one seed in each cell. Seeds alburninous, almost always stropholous.

Racemes lax-flowered, longer than the leaves; wings very oblique, herbaraceous; calyx sulcate. Petals twice as long as capsule. Ovule adhere to capsule. Fruit loculicidal capsule, with one seed in each cell. Seeds alburninous, almost always stropholous.

/ST Tr T*: Harrow. <O* <MUO>«M Hook. fr. *

Chot Nagpur, on most of the hills.

Awelk. 51
elece or aspened herb with slender stems-

keel-like. J<.0. oBOTALARI0 > ^ Ham.; F. B. I. 1 «»i & P>
Xanthophyllum

Behar: Chota Nagpur: rather uncommon.


100. *GALA* ERIOPTERA DC.; F. B. I. i. 203.

Western Behar. An erect annual. The Behar plant is the form with linear-


A large woody scandent shrub.

102. *Xanthophyllum* Roxb.

104. XANTHOPHYLLUM FLAVESCENS Roxb. • F. I, ii. 222; F. fr. 11, i. 209; E. D. X. 8.
Chittagong.

A timber tree; wood very hard and durable. B<9-Ajensak, gandi.

Order XY. CARYOPHYLLACEAE.

Herbs, rarely shrubby at the base, stems and opposite branches with usually thickened nodes. Leaves opposite, entire or wrnWe. often connate; stipules small scarious, ov 0. Mower* hermH*1* dite, rarely 1-sexual, solitary terminal, or in cymes. DUk *»?, annular or elongated, or represented by glands. Sepals i * in connate or free, imbricate. Petals 4-5, rarely 0, hypogyw**, rarely perigynous on the disk. Stamens 8 or' 10, rarely fewer, inserted with petals; filaments filiform; anthers"2-celled; dehiscence longitudinal lateral. Carpels 2-5, united as a 1-locul? rarely ly imperfection 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, wnhitropous. Fruit a membranous or erustaeons 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.

Sapna
Petels***

Stipules 0 ; petals 2-Sd if present...
Stipules scarious petals entire
Stamens united; petals various
Sepals scarious; leaves narrow, opposite and in axillary fascicles,
Sepals keeled; petals entire; style 3-fld
Sepals not keeled; petals entire, 2-dentate or erose; styles united throughout; stigma 3-toothed... Polyxycarpum.
65. Saponaria Linn.

Herb 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 capsule, rarely subglobose, 4-toothed in dehiscing. Seeds or subglobose; embryo annular.

*SAPONARIA VACCARIA* Linn.; F. B. I. i. 217; E. D. S. 850.


In fields of grain in Tirhut and Behar, common; C. Bengal, occasional only.

A cold weather weed* Benrj. Sabuni; Hind. Musna.

66. Stellaria Linn.

**Stellaria** annual or perennial, erect or prostrate; leaves usually ten: stl. Petals 0. Flowers in dichotomous cymes, or occasionally bas. Sepals 5, rarely 4, free or connate at the j. Petals 5, rarely 4, 2-fid or 2-partite, occasionally 0. Stamens int. petals usually numerous. Disk annular or divided p. Ovary 1-locular, rarely 3-locular; styles 3 or rarely f. Val. ovaries usually numerous. Fruit a short capsule, splitting b. into as many entire or 2-fid Ves as there are styles. Seeds compressed, tubercled, granulate p.early smooth; embryo annular.


Bengal, occasional in waste ground or gardens, but only near Calcutta, in the cold weather.

A variable weed.

67. Spergula Linn.

**Spergula** annual or perennial, with dichotomous or fascicled inches; leaves opposite, with frequently axillary leafy buds. Leaves become pseudo-verticillate; stipules small, scapous. Flowers in peduncled paniculate cymes. Sepals 5. Petals o.-to 10, rarely fewer, rising from the perigynous ovary Mucular; styles 3 or 5; ovules numerous. Fruit a Capsule, with 3 or 5 entire valves. Seeds compressed, winged or
Green, leaves linear, semi-terete grooved beneath; petals oblong, keeled or narrowly winged, papillose.

Glaucous, leaves linear-subulate, terete not grooved beneath, acute; seeds smooth compressed, broadly winged.

Behar; Chota Nagpur; W. Bengal.

A cold weather weed.

108. **Spergula pentandra** Linn.; F. B. I. i. 243.

_H. flaccida_ F. I. ii. 447. Bengali

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 in terminal or axillary. _Sepals_ 5, herbaceous. _Petals_ obovate; _Stamens_ 5, rarely fewer, slightly perigynous. _Ovary_ 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.

_W. 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 become pseudo-verticillate; stipules scarious. _Flowers_ small, in many-flowered cymes with scarious bracts. _Sepals_ obovate; _Petals_ 5, small, hyaline, entire or toothed. _Stamens_ 3-5, 1-locular; style short 3-fid; ovules numerous. _Fruit_ a capsule. _Seeds_ ovoid; embryo incurved or nearly straight.

110. **Polycarponeceflingii** Benth. & Hook. f; Hind. Sureta; Bengali

In fields and waste places, everywhere.

An erect or diffuse weed.

70. **Polycarpas Linn.**

Herbs, annual or perennial, usually erect; _leaves_ flat, opposite, with axillary leafy buds whence leaves become pseudo-verticillate.
PORTULACACEJE.

111. **Corymbosa** Lamk.; F. B. I. i.; E. °

In fields and waste places throughout Behar and Chota Nagpur; on sandy river-banks in N. and E. Bengal.


Order XYI. **PORTULACACEFLL.**

**Herb** rarely undershrubs. *Leaves* opposite or alternate, entire; *stipules* scarious or bristly, occasionally 0. *Flowers* regular, hermaphrodite. *Disk* 0, but ovary sometimes (*Portulaca*) partially 

*Sepals* fewer than petals, usually 2, imbricate. *K* 4-5, rarely more, hypogynous or perigynous, free or united 

*Stamens* 5, inserted with petals and some-

*Filaments* filiform; anthers 2-celled, parallel; dehiscence longitudinal, lateral. *Carpels* united as a 12-fi or half inferior 1-locular ovary; style simple below, 3- or more-

*Fruit* a 3-valved capsule. *Seeds* obovoid or cam-

**Mealy** 

**terminal, solitary or clustered, surrounded by a whorl of calyx-segments united below in a persistent tube adnate to 5* half of ovary, the upper free teeth deciduous. Portulaca.

*low* sterile, paniculate; **sepal** free, entirely deciduous; occasionally

71. *Portulaca* Linn.

*s*, annual or perennial, diffuse, usually succulent; **with** scarious or bristly nodal stipular appendages; occasionally
stipules 0. **Flowers** terminal, solitary or clustered, surrounding a whorl of leaves. **Sepals** 2, connate below, the upper 1 ovate, deciduous. **Petals** 4-6, perigynous or epigynous. **Stamens** 5 or more. **Ovary** half-superior; style 3-8-fid; ovules numerous. **Fruit** a crustaceous, circumscissile capsule. **Seeds** many, reniform.

Leaves flat; 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; nodes pilose; flowers solitary, small, yellow, surrounded by a whorl of 4 petals 4; style 3-4-fid.
- Flowers solitary, small, 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** laniva.


- Everywhere, very common by roadsides and places.
- A small diffuse prostrate annual. **Vernac.** Ohota.

114. **PORTULACA TUBEROUSA** Koxb.; F. I. ii. 464; F. B. *.

- E. D. P. 1191.
- Behar, Monghyr.
- A perennial with somewhat fusiform tuberous roots. **Vernac.** Laniva.

72. **Talinum Adans.**

Herbs or undershrubs, with succulent stems and hairy leaves, stipules 0. **Flowers** racemose or panicled. **Sepals** 2, herbaceous, ovate, deciduous or subpersistent. **Petals** 5, hypogynous. **Stamens** 5 or more. **Ovary** superior; style 3-fid; ovules numerous. **Fruit** a globose or ovoid 2-3-valved capsule. **Seeds** subglobose or compressed, numerous, strophiolate.

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.

Trees. Leaves alternate, minute, often scale-like, sometimes sheathing, occasionally fleshy; stipules imbricate, gular, hermaphrodite, rarely 1-sexual, solitary or in axillary spikes. Disk of 10 hypogynous or gynous glands. Sepals 5, rarely 4, imbricate. Petals 5, in serried rows, free or connate below. Stamens 4-5, or 8-10, rarely more, 2-cellular, free or connate below; anthers versatile, often apiculate; dehiscence longitudinal. Ovary with 3-5 sessile or semi-united ovules; styles free or connate with apical stigmas, or stigmas as long as the placentas; ovules 2-many on each placenta; capsule erect, usually more or less comose, or winged; sepal or fleshy or 0; embryo straight.

73. *Tamarix* Linn.

Cl. U. trees or bushes, leaves scale-like, sheathing and stem-singed, white or pink, in lateral or terminal spikes dense racemes, occasionally dioecious. Sepals free, 4-5, rarely 8-10, inserted below the angled or lobed disk. Stamens 4-5 or 8-10, rising from the disk; filaments connate at their bases; anthers apiculate. Ovary narrowed Pwards; styles 3-4, short, dilated into the stigmas; ovules many on a basal placenta. Seeds with a sessile coma; albums 0; embryo ovoid.

Stamens 5; disk 5-lobed:—

Leaves not sheathing; racemes long, slender. *Tamarix*...vca.

Leaves sheathing; racemes shorter, dense; flowers dioecious *dioica.*

Stamens 10; glands of disk separating the filaments; leaves...
116. TAMARIX GALLICA Linn.; F. B. I. i. 248; E. D. T. 70.

* T. indica P. I. ii. 100.

On river-banks in Tirhut, Behar and Bengal. A shrub or small tree; gregarious. *Vernav. jhau, banjhau, jaura.

117. TAMARIX DIOICA Boxb.; F. I. i. 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. 62%.

Chota Hagpur, in river beds and on their banks. A bush; gregarious.

Order XYIII. ELATINEJE.

Herbs, often minute, or undershrubs. *Leaves oPPosite or whorled, entire or serrate; stipules 2, scarious or herbaceous; *flowers regular, hermaphrodite, axillary, solitary or in late cymes. *Dish 0. *Sepals 2-5, free, imbricate. *Pertals usually 5, hypogynous. *Stamens hypogynous, free, 2-5, or 4-10; 2-celled, versatile; dehiscence longitudinal lateral. *Ctorn in a 2-5-locular superior ovary; styles as many as loculi. Stigmas capitate; ovules many in each chamber, on the angle, anatropous, raphe usually lateral. *Fruit a septic capsule, the central placental axis and often the septa persist when the valves fall away. *Seeds straight or curved with a hump 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 undershrubs, often pubescent; *leaves opposite, serrate or entire. *flowers solitary or in axillary fascicles, minute. *Sepals usually 5, with herbaceous midrib and membranous margins. Usua 5, 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, verticillata, puberuloub; stems erect with lower branche's decumbent sepals, pericarpa, and stamens each 3-6, varying synchronously; ilowers pedicelled, rosso.
Order XIX. HYPERICINE&.

Herbs, shrubs or, rarely, trees. Leaves opposite, rarely whorled, quently gland-dotted; stipules 0. Flowers regular, hermaphrodite, cymose or solitary, rarely axillary. Disk 0, or represented by hypogynous glands between the staminal bundles. Petals 5, rarely 4, free, imbricate. Petals 5, rarely 4, hypogynous, contorted-imbricate. Stamens many, rarely few, but never sessile with petals; filaments usually connate in 3 or 6 bundles, rarely free or connate; anthers versatile, rarely 2-celled; dehiscence longitudinal lateral. Carpels 3-6, in a superior 1-locular, or more or less perfectly 3-5-locular, rarely carpel solitary; styles as many as carpels, free or connate, 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 capsular or berrv-like and indehiscent, rarely breaking into cocci. Seeds usually straight; albumen 0; embryo straight or curved.

Capris bursting septicidally; seeds not winged; a herb. Hypericum. Capsular bursting loculicidally; seeds winged; a shrub. Cratoxylon.

75. Hypericum Linn.

Herbs, shrubs, or small trees; leaves sessile, gland-dotted. Sepals 0-3, usually oblique. Stamens numerous, filaments connate below in 3-8 bundles without interning structures. Petals 5, usually oblique. Stamens numerous, filaments connate below in 3-8 bundles without interning structures. Sepals 0-3, usually oblique. Stamens numerous, filaments connate below in 3-8 bundles without interning structures.
121. HYPERIUM JAPONICUM Thunb.; F. 13. I. i. 256.
Chota Nagpur, common; Tirhut; N, Bengal; E.Benga, rare; Chittagong.
A small tufted or prostrate annual.

76. Cratoxylon Bl.
Trees or shrubs; leaves entire, usually chartaceous. Flowers in axillary or terminal cymes. Sepals 5, imbricate. petals of appendaged or not at the base. Stamens numerous, in 3, rarely 0, bundles, with fleshy intervening hypogynous glands. Ovary 3-locular; 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 NERIIFOLIUM Kurz; F. B. I. i. 257; E-
Chittagong.
A shrub, 10 feet high.

Order XX. GUTTIFERÆi.
Shrubs or trees, with yellow or greenish resinous juice. Leaves opposite decussate, rarely whorled, simple, entire, usually coriaceous; stipules 0. Flowers, dioecious or polygamous, rarely hermaphrodite; axillary or terminal, solitary, fascicled, or in simple or panicked few-flowered cymes, very rarely subracemose. Disk 0, or fleshy annular. Sepals 2-6, imbricate, or in decussate pairs. Petals 2-6, rarely more-or 0, usually much imbricate or contorted, e Stamens usually many, rarely definite and as many or twice as many as petals; filaments free or all 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. Seeds large, often with arillus or arillode; albumen 0; embryo conform to seed, with either a large radicle and obsolete cotyledons or thick cotyledons and minute radicle.
GUTTIFERÆ.

? lyx closed before flowering, at length opening into 3 valvate segments; petals 4; ovary 2-celled, ovules A in short, stigmatic 3-lobed; embryo a large radicle

2 or (rarely) each cell; style with subobsolete Ochrocarpus

A lyx of 4-5 free sepals:—

Ovary (2-celled) with ovules (erect) 2 in each cell, style short, stout, stigmatic 3-lobed; petals 4; ovary 2-celled, ovules A in subobsolete short, stout, stigmatic 3-lobed; embryo a large radicle

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 more

Ovary 2-12-celled; ovule attached to inner angle of style, ovary sessile or subsessile, entire or lobed, peltate; embryo with small cotyledons; petals 4-5

77. Ochrocarpus Thouars.

Trees with coriaceous usually 3-nately whorled calyx, polygamous or hermaphrodite. SepaU opening in flower into 2, rarely 3, rather Pals. Petals 4-7 or more. Sti long, Zi oblong, or in, free or shortly connate below; with dehiscence longitudinal. Ovary 1-celled; ovules 2 in each cell I on large radicle a large radicle subobsolete cotyledons.

123. OCHROCARPUS LONGIFOLIUS Beilth. & i-270; E. D. O. 6.


78. Mesua Wnn.

T 8 many) slender> paraneous, opposite, very coriaceous, olttK leaf; 1, at right S 16" io hermaphrodite. Her showy, solitary, axillary, polygamous. Ovule 4, imbricate. Petals 4-5, imbricate: Others erect, 2-celled; dehiscence longitudinal. Ova filiform, free or connate at the base. Gyl oblong, 4, imbricate. Petals 4 in each cell; style short, ovary 1-celled, ovules 2 each cell:—

Be*. 1-4;
124. **Mesua Fœbrea** Linn.; F. I. ii. 605; F. B. I. i. 277; B< 490.

N. Bengal, Dinajpur; Chittagong; Chota planted only.


79. **Calophyllum** Linn.

Trees; leaves opposite, shining, coriaceous, with many parallel veins at right angles to midrib. Flowers polygamous, axillary and terminal panicles. Perianth of 4-12, imbricate sepals and petals. Stamens numerous; filaments often flexuous, free or connate below; anthers 2-celled, dehiscence longitudinal. Ovary 1-locular; style slender, peltate; ovule solitary, erect. Fruit subdrupaceous, crustaceous putamen. Seed erect, ovoid or globose, with very testa.

Leaves oblong or obovate-oblong, obtuse or emarginate, shining even; racemes shorter than leaves, in upper axils; flowers -7-indiam. Leaves lanceolate-acuminate, margins waved; racemes as leaves, terminal; flowers -35 in. in diam.

125. **Calophyllum Inophyllum** Linn.; F. I. ii. 606; F. B. i. 278; E. D. c. 146.

Orissa, coast; elsewhere often planted.


126. **Calophyllum Polyanthum** Wall. F. B. I. i. 274; C. 152.

Chittagong.


80. **Garcinia** Linn.

Trees, with usually yellow juice; leaves very coriaceous, evergreen, opposite; stipules very rare. Flowers polygamous, fascicled or paniculate, axillary or terminal. Sepals 4-5, decussate. Petals 4-5, imbricate, Stamens numerous, free or connate in a ring or a globose or conical 4-5-lobed column.
Order XXI. TERNSTRCEMIACEJE.

Entire or shrubs, rarely climbing. Leaves alternate, simple, or serrate, generally coriaceous; stipules 0; very rarely or digitately compound or minutely stipulate. Stems generally showy, generally with 2 sepaloid bracts, regular, or slightly 1-sepaloid -1- sexual. "Disk 0. Sepals 5. rarely 4-7, free or connate, intricate, the innermost often larger. Petals...
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 ap
tropical, by slits rarely by pores. Carpels united in a
2-, very rarely many-celled superior, rarely half-infer-
sessile, wide-based; styles as many as loculi, free or unite,
usually small; ovules 2-many in each cell, rarely so
trigonal or campylotropous. Fruit indehiscent, soft,
woody, or dehiscent capsular. Seeds few or many on
placentas; albumen scanty or 0, rarely fleshy; embovshoe-shaped or spiral.

Flowers small, dioecious; fruits small, indehiscent; stamens
fewer); peduncles 1-flowered; anthers basifixed.................

Flower conspicuous, hermaphrodite; fruits medium, dehisc
many; anthers versatile:

Peduncles few- or 1-flowered; albumen scanty or 0; see
Seeds flat, kidney-shaped, winged on the back................
Seeds irregularly globose, wingless............................
Peduncles many-flowered; albumen copious; seeds

81. Eurya Thunb.

Shrubs; leaves usually crenate-serrate. Flowers
sessile or shortly pedicel led in axillary fascicles,
solitary; bracteoles persistent. Sepals 5. Petals 5, conn
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.

130. EURYA ACUMINATA DC.; F. B. i. i. 285; E. T> C
Chittagong.
A shrub.

82. Schima Reinw.

Trees; leaves evergreen, thin. Flowers axillary, solitary or the
uppermost in 3-5-flowered racemes, showy, 2-bracteolate,
phrodite. Sepals 5. free. Petals 5, connate at the has
outermost concave subcucullate. Stamens numerous, adn
base of petals. Ovary 4-6-locular, usually 5-locular; styles
or faintly lobed above, stigmas broad spreading; ovules
TERNSTIUEMIACE EX.

83. Camellia Linn.

Trees or shrubs; leaves coriaceous or membranous, evergreen, serrate. Flowers usually showy, axillary, solitary or sub-axillary, sessile or shortly peduncled. Sepals 5-6, unequal, a series of subsimilar bracts, and graduating from these to petals. Petals 5 or more, slightly connate below. Stamens outermost many-seriate, more or less connate and monandrous, as well as adnate to base of petals, innermost 5-12-2-seriate. Ovary 3-5-locular; styles as many as loculi, free or or less connate; ovules 4-5 in each cell, pendulous from the angle. Fruit a short, woody capsule, opening loculicidally. Seeds flat, reniform, winged on the •*«; albumen scanty; cotyledons leafy, accumbent.

Schima Wallichii Choisy: F. B. I. i. 289; E. D. S. 940.

Gordonia integrifolia F. I. ii. 572.

Chittagong.


84. Saurauja Willd.

or shrubs; young branches brown with white lenticels, or scaly, as are the large, usually serrate leaves with Parallel veins diverging from the midrib, generally aggregated in near ends of branches. Flowers usually hermaphrodite, rarely few-flowered cymes or panicles, axillary or from scars of fallen leaves; bracts usually small and remote from Sepals 5, much imbricate. Petals 5, usually connate. Stamens numerous; anthers with porous dehiscence. Zy usually indehiscent, berry-like, rarely dry and subdehiscent. Seeds many, small; albumen copious.
250

BENGAL PLANTS.

133. SAURAUJA ROXBURGHII Wall.; F. B. I. i. 287.  *Tefi* *serrata* F. B. I. ii. 521.

Chittagong.

A shrub or small tree.  *Vernac* Dalîp.

**Order XXII. DIPTEROCARPEæ.**

Trees with resinous juice, rarely climbing shrubs, alternate, simple, entire or sinuate-crenate, with parallel nerves; stipules small or large, persistent, deciduous, leaving an annular scar.  *Flowers* regular, hermaphroditic, fragrant, in axillary or terminal panicles.  *Disk* 0, connate; tube free campanulate, or short adnate to base.  Lobes 5, at first imbricate, later often subvalvate.  Torted, connate at base or free.  *Stamens* many, or hypogynous or subperigynous, free, connate, or adnate, filaments short, often dilated below; anthers 2-celled, sometimes larger, connective often ariste or appendage hiscence longitudinal introrse or lateral.  *Carpels* united Hilum 3-locular, rarely 2- or 1-locular ovary, generally so immersed in the torus; style single subulate or fleshy, entire or minutely 3-lobed; ovules 2 in each cell pedunculate, usually lateral, rarely solitary and erect, anatropous.  *Fruit* indehiscent, nut-like, 1- or rarely 2-seeded, sometimes capsular and 3-valved, accompanied by the usually wing-like, seed large, usually invested with thin testa albumen, very rarely (Ancistrocladus) with runiinae albumen; embryo with usually fleshy, often unequal, cotyledons copious.

Ovary 1-celled with solitary ovule; stigmas 3, distinct; seeds with ruminate albumen; climbing, stipules minute or 0.  *Ancistrocladus* 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;—

Sepals united at the base only, segments subvalvate:—

Two calyx-lobes expanded into narrow wings

All calyx-lobes equal in fruit

Sepals quite free, valvate; three outer calyx-lobes expanded in fruit

Vayarca  Lecýris  Amboinsia  Shorea.
85. Ancistrocladus Wall.

Shrubs, climbing with short supra-axillary often arrested and circinately hooked branches; leaves glabrous, coriaceous, usually punctately veined; stipules minute, caducous, or 0. Calyx 5-lobed, lobes imbricate, tube at first short, adnate to base of and adnate to fruit, with lobes unequally large, spreading. Petals 5, minute. Stamens Ovary 1-celled, at length subinflorus; rounded or shortly cylindric epignous, ct, basal or lateral. Seeds solitary, sub-embryo short, straight.

• Ancistrocladus Walliiii Planch.; F. B. I. i- ^00.

Chittagong.

A climbing shrub with supra-axillary circinate hooks.

86. Dipterocarpus Gaertn. f.

Lofty trees; yomifoliae decreasing branches more or less closely pubescent with tufted hairs; leaves coriaceous, entire or sinuate, lateral nerves subparallel; petiole somewhat swollen at apex; stipules Minute, valvate, enclosing the bud, caducous from an annular scar. Moh. Considerably at first free, two of the lobes much accrescent. Petals of Ovary 3-locular; style filiform; ovules 2 in C. Us. Fruit mdehiscent, nucular, 1-, rarely 2-seeded, with IT* the accrescent free calyx-tube, which is surmounted by persistent calyx-lobes, \( \frac{1}{2} \) of which are enlarged into erect lanceolate coriaceous wings. Seed adnate to the pericarp en 0; embryo with large, thick, fleshy, unequal Cotyledons.

V. - obv in huit with neither ribs nor wings:

- Other branches not pilose:

- n g branches cylindrical, canescent

- otn branches more or less pilose:

Wube in fruit 5-ribbed or 5-winged:

- An8les 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
Leaves glabrous above, somewhat pubescent beneath.

Calyx-tube with angles widely winged:—
Buds ovoid; leaves truncated to subcordate at base; enlarged calyx-lobes 1-5 in. wide.
Buds cylindric; leaves wedge-shaped to truncated at base; enlarged calyx-lobes 1-5 in. long; 75 in. wide.

Tippera; Chittagong.

136. DIPTEROCARPUS LEVIS Ham.; E. D. D. 685.
F. I. ii. 612; F. B. I. i. 295.
Tippera.

Chittagong.
A tall tree.

Chittagong.
A tall tree.

139. DIPTEROCARPUS SCABER Ham.; F. B. I. i. 297.
Tippera.

140. DIPTEROCARPUS COSTATUS Gaertn. f.; F. I. ii. 614. D- 
F. B. I. i. 298.
Tippera.

Chittagong.

142. DIPTEROCARPUS ALATUS Roxb.; F. I. ii. 614; F. B. I. i. 298.
E. D. D. 676.
Planted not infrequently.
niPTEROCAPPEJE.

lurhinatus; this is almost certainly correct. As, now-
proposed separate on account of their very different economic
and accurate an observer as Buchanan-Hamilton,
observation in the field controverted his
inferred one has by actual
inference of one 01
more better here to leave the two trees as distinct
species. D. costatus is reduced to D. alatus, on
the figure of D. costatus given by Gaertner is bad
attention of one of
Gaertner's figure is an excellent representation of one ot
there is every reason to think that the species it repre-
which Roxburgh indicates by the name D. costatus.
the S. 8. the tree
Gaertner's tree. But here again no one is yet in a
being, however, that D. incarnis, or at all events the tree we know by
no Chittagong species. The same remark
or V. abttns, of which I have seen no Chittagong specimens,
that holds turbinatus. I am, however, prepared to believe that when
he says he got two species with a 5-winged calyx in Chittagong he
them there. The 5-ribbed species (D. costata), it will be
from the coast south
of Chittagong. Buchanan-Hamilton got it, how-
to be T the coast not frd in Chi-
tagong if only it is carefully looked for. It is to be
may V. in a second edition of this work is called for, the editor
record that the identity of these Garjans has been satis-
ss about trees so important as the
was known by English residents in Bengal 90 years ago.

87. Yatica Linn.

v. Tr. small trees; leaves coriaceous, entire, reticulately
s. Stipules small, caducous or inconspicuous. Flowers in
Ov. Panicles. Calyx 5-lobed, tube very short, adnate to base of
the first, imbricate, at length subvalvate, persistent, and
him them considerably accrescent in fruit. Petals 5. Stamen*
5, filaments oblong, connective apiculate. Ovary 3-locul.
unsubulate clavate or capitulate, stigma entire or 8-toothed;
2 in each loculus. Fruit a coriaceous 3-valved capsule, or
dehiscent leathery, resting on the accrescent calyx-tube, with
persistent spreading segments, of which 2 are accrescent as linear wings. Seeds 1-2; embryo with fleshy cotyledons.


Chittagong.

88. Isauxis Arn.

Medium trees; leaven 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 lancefolia F. T. jll-

601. Vatica lancefolia F. B. I. i. 302; E. D. V. 40.

Chittagong.

89. Shorea Koxb.

Trees, with glabrous or pubescent young branches; leaves entire or subrepend, coriaceous, lateral veins subparallel; stipules large coriaceous, persistent, or small caducous. Flowers in axillary or terminal laxly panicled cymes; bracts persistent or caducous, or Calyx 5-lobed, tube very short, adnate to the thalamus; segments imbricate, persistent, and three accrescent in fruit. Petals 5. Stamens 15, or 20, or numerous; anthers usually subulate, rarely blunt connective and obtuse, rarely cuspidate lobes. Ovary 3-locular; style subulate, stigma entire or 3-toothed, ovules 2 in each loculus. Fruit leathery indehiscent, rare 2-valved dehiscent, closely surrounded by the persistent coriaceous segments of which the three outermost are enlarged into coriaceous linear wings. Seed usually solitary; embryo with large fleshy cotyledons.


Tirhut; N. Bengal; Chota Nagpur.
A fine tree. Vernac. Sal (general); Santal. Sarjou; Uriya Sekwa.
Order XXIII. MALYACEJE.

Herbs, shrubs, or trees, often stellate-haired, inner bark fibrous, wood soft, juice mucilaginous or rarely acid. Leaves alternate, palmined 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;lehiscence longitudinal extrorses. 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 CcU» axial on the inner angle, amphitropous, raphe usually ventral. dmmit 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]
tCarpels 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.

* Styles 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; Urena.

Bracteoles connate 5; carpels spinescent or unarmed; -flowed pink..............................[p. 255; Urena.

Bracteoles intermixed with flowers, or 0; flowers in dense heads; carpels unarmed; flowers yellow or white,.................Malachra-

Carpels when ripe forming a capsule :—[p. 255]

Stigmas spreading; seeds reniform:—

Ovary 3-celled, ovules 2 in each cell ascending; flowers paniculiflorous, polygamous; small trees,....................................Kydia*

Ovary 5-celled, sometimes spuriously 10-celled from false dissepi-

ments, cells opposite petals, with three or more ovules; flowers axillary......................................................Hibiscus.

Stigmas cohering in a club-shaped mass:—

Bracteoles 3, large cordate; seeds cottony..................Gossypium*

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 in cotton; staminal tube long; flowers white...............Adansonia*

Calyx truncate or irregularly toothed; fruit ovate, 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 fasciculiflori; 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 solitary in each loculus. Fruit consisting of separating but indehiscent ripe carpels. Seed solitary, ascending in each separate coccus.

146. Malva Vepticillata Linn.; F. B. I. i. 320; E. IX M. 12&

N. Bengal; cultivated throughout Dinajpur and Bog as a cold weather vegetable.


91. Malvastrum A. Gray.

Herbs or under shrubs with entire or divided leaves. Flowers axillary or in terminal spikes; bracteoles 3, narrow. Cupular, 5-partite. Petals 5, exceeding the sepals. Sta...
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 
i styre; with- or without beaks. Seed solitary, ascending in each

4-itr ace 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 

peduncled, solitary or fascicled, axillary or in terminal racemes 

heads or spikes; bracteoles 0. Calyx of 5 sepals connate below 

HI a tube. Petals 5, free above, connate below and also adnate to 

minal column. Stamens many, connate, tubular below, dividing 

ve into distinct antheriferous filaments. Carpels 5 or more, 

orled 1-seriate; styles free as many as carpels, stigmas 

niinal. Fruit consisting of separating ripe carpels generally 

d at the tip and opening irregularly to admit of the fall of 

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 

utinous..........................veronicifolia.

ktems erect; leaves and stoutish branches glutinous....glutinosu.

Pedicels jointed under the flower :—

leaves always cordate at hate, usuall^acute but sometimes obtuse 
at *ip; petiole as long as leaf-blade; carpels 10...........cordifolia.

leaves only sometimes cordate at base, always obtuse at tip; petiole 
snorter than leaf-blade; carpels 5..........................spinoxa.

Ve cuneate at the base :—

arPels 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. spinosad
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; peduncule 
jointed in the middle as long as petiole; carpels 5-9, awned 

Leaves pubescent to hoary beneath; peduncle longer than petiole, 
jointed near base:
Leaf-blade rhomboid acute. ................. \textit{rhombifolia} var. \textit{ttjpi}'-
Leaf-blade rhomboid obtuse or subacute \textit{rhombifolia} var. \textit{rhomboidea}-
Leaf-blade obovate. ......................... \textit{rhombifolia} var. \textit{obovata}.

149. \textbf{SIDA VKRONICIFOLIA} Lanik. \textit{S. humilis} F. I. iii. 171; 
F. B. I. i. 322; E. D. S. 1699.
Everywhere common.
A procumbent branching weed of waste places. \textit{U}''''\text{J}''
Junka; \textit{Santal}. Jokka sakani.

150. \textbf{SIDA GLUTINOSA} Cav.; F. I. iii. 172. \textit{S. mysorensis} F. 13-
i. 322.
W. Bengal; Behar; Chota Nagpur.
A glutinous erect herb.

151. \textbf{SIDA COKDIJOM} \textit{T.inn.}: F. J. iii. 177; F. B. I. i. *\textit{24}; 
E. L>. S. 1694.
W. Bengal; Jicliur; L'luUi Nagpur.
A softly hairy erect weed. \textit{Beng}. Berela.
This is often very difficult to distinguish from the cordate-leave 
form of \textit{S. tpinosa}; the best character in this case is the number 
of carpels.

152. \textbf{SIDA SPINOSA} Linn.; F. B. I. i. 323; E. D. S- 
\textit{S. alba} F. I. iii. 174.
Behar; Chota Nagpur.
A weed. \textit{Beng}. Ban-methi; \textit{Himl}. Jangli-methi-

There are two forms of this species; one has leaves cuneate base \textit{S. alba} ; the other has cordate-based leaves \textit{S. aliiijolic}-
latter is not easily separated, except by its only having 5 earp
\textit{S. cordifolia} ; the former is not always easily separated, except by 
thinner-walled carpels and its peduncles jointed very high up, 
certain varieties of \textit{S. rhombifolia}. Owing to the existence 
of these

\textit{The}
two forms, which are perhaps specifically distinct, it is necessary to show *V. spinosa* twice in the key.


Everywhere common.


Everywhere common in localities like the last.


Chota Nagpur, common; Bengal, rare.


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. Petals 5, connate below and adnate to base of a tube. Stamens numerous, united below in a tube, parating above into distinct antheriferous filaments. Carpels 5 or more; styles as many as the carpels. Fruit of awned and 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, the upper ascending the lower usually suspended or horizontal.

<table>
<thead>
<tr>
<th><strong>Carpels</strong></th>
<th><strong>Filaments</strong></th>
<th><strong>Leaf shape</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>free nearly to the base</td>
<td>orbicular cordate, covered on both sides with felted down</td>
</tr>
<tr>
<td>5</td>
<td>free at apex only</td>
<td>longer than petioles</td>
</tr>
</tbody>
</table>

*indicum.*

*See* indicum.
155. ABUTILON POLYANDRUM Schlecht. ; F. B. I. i. 55.  
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. 255.  
Sida indica F. I. iii. 179.  
Everywhere, a very common weed.  
An erect woody herb. **Beng.** Petari, jhainpi’; Jhampi, kanghani; **Santal.** Miru baha.

157. ABUTILON AVICENNIAE Gaertn.; F. B. I. i. 327; *D. A.*  
Sida Abutilon F. I. iii. 178.  
Bengal, Dacca, &c.; somewhat rare.  
An erect herb.

94. Wissadula Meclik.  
Undershubs; stems and palmately lobed leaves hairy. **Flowers** in lax terminal panicles; bracteoles 0. **Petals** 5, connate and adnate to below. **Stamens** numerous, in a tube below, divided into separate antheriferous filaments. **Carpels** usually 1-seriate; styles as many as carpels. **Fruit** consisting of seeded, beaked, dehiscent ripe carpels, each with usually averse dissepiment. **Seeds** 1-3 in each loculus, the lower suspicended the upper ascending.

W. 91. *cia periplocifolia* F. I. iii. 178.  
C. Bengal, an occasional escape; elsewhere ci 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, anthen without, truncate or U-shaped at the apex. **Ovary** 5-locular; **ovules** solitary in each loculus. **Fruit** consists of ripe carpels that separate from the axis but may theinsel
URING MALVACEAE.

See <1 solitaria more or less 2-valved> smooth netted or winged.

PAY** in each Cell) ascending.

** ONIA ODORATA Wild.; F. I. iii. 214; F. 13. Li. 331;

hota Nagpur.

W. of fields and waste places. **

96. Urena Linn.

Ijeriodes or leaves an

Polyplets and rigid

Petals 5, usualy clustered; bracteoles 5, adnate to the

alternate connate below in a cup. Calyx 5-cleft.

Petals 5, connate at base and there adnate. Stamens many, connate in a tube

branch opposite the petals; style with 10 stigmas capitate; ovules solitary in each loculus.

Carpeled; stamens connate at base. Seed solitary in a 

Galeopsis ascending.

Leaved; with hooked bristles;

Carpeled; not divided beyond the middle........ lobata.

Singly into 5 oblong lobes narrowed at the

Carpeled; sinuata.

Smooth netted. ........................................ repanda.

** KNA LOBATA Linn.; F. I. iii. 182; F. B. I. i. 329; E. D.

U. 29.

Everywhere very common.

A Weed of waste places and roadsides.

161 T

E 

Bun-okra; Santal. Bhidi janetet.

* 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.

Ben U. Kunguiya; Hind. Lobloti; Santal, Mota bhidi

162 U

KNA REPANDA Roxb.; p. II. iii. *882 ; F13. I. i- 330;

D- U. 331. U. palmaia F. I. iii. 182.

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 stamina. Stamens numerous, connate below in a short tube, truncate 5-toothed at its mouth and there dividing into many antheriferous filaments. Carpels 5, 1-serial; styles 10; ovules solitary in each carpel. Fruit of 5 ripe carpels separating from the axis and dividing itself indehiscent. Seed solitary in each carpel, ascending, reniform.

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.

98. Kydia Hoxb.

Trees; leaves palmately lobed, stellately hairy. Flowers polygamous, in close panicles; bracteoles 4-6, connate below, accrescent and spreading in fruit. Sepals 5, connate at the base. Petals 5, obcordate, oblique, adnate below staminal tube. Stamens about 15, united below in a tube separates above the middle into 5 bundles each bearing 2-3-locular; style 3-cleft, stigmas 3, peltate, imperfect in functional male flowers; ovules in each loculus 2, ascending-subglobose, obtuse, loculicidally 3-valved capsule. Seeds reniform furrowed.


W. Bengal; Behar; Chota Nagpur.


- Herbs, shrubs, or trees; leaves more or less palmately stipulate. Flowers axillary; bracteoles 5 or more, rarely separate or connate at the base. Calyx 5-toothed or 5-fid, spathaceous circumscissile. Petals 5, connate at the very base there adnate to staminal column. Stamens numerous, connate in a tube, truncate or 5-toothed at the apex, giving off near and below top many antheriferous filaments bearing reniform anthers.
MALVACEAE

Fruit a lobe-subglobose, 5-valved sometimes with a separating vertical slit; ovules 8 or more in each loculus.

Vegetative habit: a dSepsiments. Seedglabrous, hairy or woolly.

Fruit: a lobe-subglobose, 5-valved sometimes with a separating vertical slit; ovules 8 or more in each loculus.

Flowers: small white; bracteoles short, small, caducous before the dehiscence; bracteoles 5-20, always quite free, often caducous; seeds smooth:

Bracteoles 6-15, narrow linear:

B. triloba (= Viriaca lutea) flowers 4 or 5, flowers under (5 in. across. . . . . . . . . piuieix.

Leaves almost glabrous; bracteoles glabrous except the tomentose base.

Leaves and bracteoles more or less hispid and bristly:

Lowers only 2 in. across; bracteoles usually 4 only

Lowers 5-8 in. across:

B. triloba 4 or 5, flowers under (5 in. across. . . . . . . . . piuieix.

Leaves single, glabrous, not inflated:

Leaves more or less 3-lobed, glandular beneath; corolla reflexed:

Leaves entire or only serrate, not glandular; corolla reflexed...
§ Capsules hirsute, oblong acuminate or truncate apiculate; seeds hairy, but not cottony:—[p. 263]

Flowers small concolorous yellow or white; peduncles as long as petioles; bracteoles minute or altogether wanting; capsules longer than calyx:—

Flowers large yellow with maroon or purple eye; bracteoles very hairy:

Capsule longer than calyx, acuminate, not winged; sepals 3-nerved; all parts densely glutinously hairy:

Capsule shorter than calyx, truncate apiculate; sepals 5-nerved; all parts softly villous:

Calyx-lobes with a prominent midrib and with usually thievish indurated borders:—[p. 263]

Bracteoles bearing on the back an oblong or linear appendage:

Appendages of bracteoles leafy, oblong; flowers pale yellow with a purple eye:

Flowers short-peduncled, 2 in. across; stipules lanceolate; stem stiffly hirsute and usually prickly:

Flowers on long slender stalks, 1 in. across; stipules linear; 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, hairy in fruit, lobes prickly, midrib of each a large gland; bracteoles adnate to base of calyx-tube; glabrous:

Calyx fleshy, red, lobes not prickly; midrib without gland;

BRACTEOLES not adnate; seeds hispid:

Subdivisetia:—

*Those shrubs, erect or rarely climbing, or trees; bracteoles always present, 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 angular outline, cordate at base; flowers small, yellowish white with crimson eye, in many-flowered terminal panicles:

Erect shrubs:—

Bracteoles 6-7, free; leaves not cordate at base; stipules glabrous:

Hibiscus

Carpels

Peduncle

Peduncle!
MALVACKA'.

Bracteoles free; all parts densely scurfily tomentose; leaves angled or lobed; flower white changing to rose:......*mutabilis*.

Bracteoles 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:......*macrophyllum*.

Arpels more or less completely subdivided by spurious vertical septa; acteoles 10, connate at base into a distinct cup; seeds glabrous:—

Free portion of bracteoles twice as long as cupular base; carpels Jocular only at the base; leaves regularly cordate; stipules large Pathulate; flowers yellow with rose-coloured veins:......*tortuoso*.

Free Potions 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

Leaves usually 3-partite, sparsely pubescent beneath


An annual. There are two forms, as indicated in the they are not, however, specifically distinct. Leaves at base rounded cordate, those higher up and younger palmately lobed, lobes rounded sinuses wide. Beng. Bandheras, jangli bhindi.

Hibiscus esouentus Linn.; F. B. I. i- 343.


Everywhere cultivated in gardens.


Hibiscus abelmoschus Linn.; F. I. iii. 202; F. J». L i-342; E.D.H. 168.

N. Bengal; Chittagong.


Hibiscus cancellatus Koxb.; F. I. iii. 201; F. i. 342.

Behar, Rajmahal Hills; Chota Nagpur, common. A herb with very bristly leaves and stems, 2-d tee* hi-h
169. HIBISCUS MANIHOT Linn.; F. B. I. i. 341.

*C. Bengal, naturalised.

A tall almost glabrous herb, native of China.

170. HIBISCUS TETRAPHYLLUS Koxb.; F. I. 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 have
been collected near Calcutta since Roxburgh’s day. The
were issued by Wallich as H. tetraphyllus are, in n^i
form of H. pungent; they certainly are not the Concan
plant that agrees with the coloured drawing which Roxbuig
his H. tetraphyllnx.

171. HIBISCUS PUNGENS Roxb.; F. I. iii. 341.

Behar, Rajmahal Hills, rather common.
A tall, very bristly species with broad, leafy and very large flowers.

172. HIBISCUS HOSTILIS Wall.; F. B. I. i. 342.

Chittagong.
Taller, more bristly and with larger flowers than the preceding but hardly deserving to be considered a species.

173. HIBISCUS TRIONUM Linn.; F. B. I. i. 334.

Behar, cultivated only.
A pubescent annual with orbicular lower leaves and
partite upper leaves, in shape rather like those of H. neus.

174. HIBISCUS HIRTUS Linn.; F. B. I. i. 335.

F. I. iii. 194.
Behar, frequent; probably, however, only an escape from gardens.
In habit somewhat shrubby. Beng. Lal-surgumuni.

175. HIBISCUS MICRANTHUS Linn.; F. B. I. i. 335.

rigidus F. I. iii. 195.
Behar; Chota Nagpur.
Shrubby, very like the preceding in habit.
A weed of waste places and roadsides.
**MALVACEAE**


Behar, occasional.

Weed of waste places and roadsides.

177. HIBISCUS PANDUREFORMIS Burm.; F. 13. I. i- 338. JI.; *tnbulosua* F. I. iii. 196.

Behar; Chota Nagpuri.

A herb.

178. HIBISCUS VITIFOLIUS Linn.; F. - .200; F. B. T. i. 3rt8; E- D. H. 263. *H. truncates* F. I. i*. 100.

In all the provinces, common.


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 prickles.

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 ‘LVilld.; F. I. iii. 209; F. B. I. i. 335.

Bengal, cultivated.

Most 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 Ktmrna.

183. 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.

Arak kudrum, togot arak. The Rozelle.

184. HIBISCUS SCANDENS Roxb.; F. T. iii. 200; P. B. I- TM.

Chittagong.

A woody climber.

In gardens everywhere.

17r

186. *Hibiscus* mutabilis Linn.; F. I. iii. 201; F. B. i. 337; E. D. H. 224.
A small tree or large shrub everywhere setose.
Kashia udal, kashia palla.

Chittagong.
A small tree or large shrub everywhere setose.

188. *Hibiscus* tortuosus Wall.
Sundribuns.
A rambling bush.

This is not the variety "tortuosus" of the next species (i. 343) which was issued by Wallich under his number according to the F. B. I. But is the plant from the "k" of the Ganges" issued by Wallich as 1913/A, of which the takes no notice. It has much the appearance of the next in foliage, but the large stipules and long bracteoles amply it. As regards both stipules and bracteoles it is closely rela e H. macrophyllus, but it has none of the setae; moreover, its cap are partially subdivided and its seeds are not hairy. This sh the real H. macrophyllus of Roxburgh if that species be rightly c by Voigt to Par it unith the section of *Hibiscus* with subdivided where there is not even a rudiment of a false dissepiment. *tortuoma* of Roxburgh is, as his figure shows, only H. tiliaceus. *H. tortuosus* ripens its fruits regularly but always abortive seeds; it is, with hardly a doubt, a natural hybrid H. (macrophyllus) *x tiliaceus*. 
MALVACEAE.


Orissa; Sundrihuns; Chittagong: always near the sea.

A large shrub or small much-branched tree. Beng. Bola; DW^aBaria.

HIBISCUS TRICUSPIS Banks; F. I. iii. 202; F. B. I. i. 344; E. D. H. 261.

Frequently planted.


100. GoBsypium Linn.

Shrubs, or low trees; leaves palmately lobed. Flowers large, yellow usually with crimson centre, or purplish, on jointed peduncles; bracteoles 3, large, leafy, cordate. Calyx truncate or slightly 5-toothed. Petals connate at the base and there adnate to the staminal tube. Ovules numerous, connate in a tube, truncate or 5-toothed at the apex giving off below the apex many antheriferous filaments. Ovules 5-locular; style clavate, 5-grooved at the apex, stigmas 5; seeds in each loculus numerous. Fruit a loculicidally 3-5-valved capsule. Seeds densely clothed with woolly hairs.

Seeds free, hotbed with closely adhering silky down; bracteoles divided below the middle. Seeds free, hotbed with closely adhering silky down; bracteoles divided below the middle. Seeds free, hotbed with closely adhering silky down; bracteoles divided below the middle.

192. GOSSYPIUM HERBACEUM Linn.; F. I. iii. 184; F. B. I. i. 340; E. D. G. 404.

Cultivated.


GOSSYPIUM AGUMNATUM Boxb.; P. I. Ut. 189; E. D. a. 400.

6- barbadense var. acutinata F. B. I. i. 347.

Cultivated.


Shrubs or trees; leaves entire or lobed. Flowers large, axillary, usually with crimson centre, or purplish, on jointed peduncles; bracteoles 5-8 arising from the thickened apex of the peduncle, deciduous. Calyx truncate, minutely 5-toothed, or 5-P<tit. Petals connate at their bases and there adnate to the staminal tube.
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, en 5-toothed; ovules in each loculus few. *Fruit* a loculicida or subindefhiscent. *Seeds* glabrous or tomentose.

A tree with glabrous leaves; young branches and unripe capsules covered 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; *^E^*

*Hibiscus populneus* F. I. iii. 190.

Suntribuns, plentiful; elsewhere very often as a p tree. *Beng.* Paras, paras-pipal. The Portia Tree.


Behar; Chota Nagpur.


102. Adansonia Linn.

Trees, with short thick trunk, bulbous below and with branches; *leaves* digitately compound, deciduous. *Flowers* solitary, long peduncled, pendulous. *Calyx* cupular, 5-cleft, 2-bracteolate. *Petals* 5, adnate at base to the column. *Stamens* numerous, connate in a cylindric tube at the top many antheriferous filaments. *Ovary* 5-locular; style long, exserted, divided into as many branches as loculi, stigmas radiating; ovules in each cell numerous. 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; *^E^*D.A.455.

Planted here and there, especially in the western parts and especially near the tombs of Mussalman s. 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 urst. ing into 3-7-lobes; bracteoles obsolete but calyx and peduncle 0. asked with 2-3 scars. Petals 5, adnate below to staminal tube. 2* mens numerous, connate below in a tube, dividing upwards less or less completely into 5 usually again subdivided phalanges; stame filaments all with 1-celled or occasionally the series next style with 2-celled anther. Ovary 5-celled, style filiform; gmas 5, often very minute; ovule* in each cell numerous. Seeds globose, embedded in the woolly packing derived from the endocarp; testa thin; albumen scanty.

Order XXIV. STERCULIACE^.

Trees or shrubs, rarely climbing, or herbs, often stellate paired; bark fibrous, wood soft, juice mucilaginous. Leaves alter...
BENGAL PLANTS.
nate simple, fewed or rarely digitately compound, when simply
in a column or tube well often adnate; petals 5 or 0, contorted
heads or in a ring at apex; stamens alternate or 1-sexual usually in aulicular;
parviflorous. Disk 0.
al cymes. Disk 0. % W 5, connate below rarely through-}
out, rarely free; lobes valvate. Petals 5 or 0, contorted »
free or sometimes adnate below to staminal column. Stamens
flowers 1 sexual or polygamous; petals 0; androecium columnar or
androcei. Anthers numerous, irregularly clustered; head or ring at apex of
flowers hermaphrodite; 1 carpel in Waltheria); present; mature carpels conjoined (only
Petals flat, deciduous or persistent: — [p. 278]
Petals deciduous:

Anther-cells divaricate or confluent; seeds without wings

Anther-cells pinnate. Androcei top; s to n, q
Androcei tubular: « *** en erous margin; anthers 15 in
5 groups alternating with 5 staminodes
Pentape ***

* Petals flat, deciduous or persistent: — [p. 278]

Petals deciduous: —

safes wood T:... CUP USUALLY alternate 8 with staminodes; cap-
STERCULIACEAE,

105. Sterculia Linn.

Shrubs or trees, with simple, palmately lobed, or compound leaves. Flowers in axillary or terminal panicles, polygamous, with sessile or stipitate ovary, androecium 1-seriate, generally opposite the petals. Petals 2-4 between each pair of staminodes; anthers cylindrical, with a linear 2-hd blade; capsule globular, prickle or winged:—

Abroma.

Trees or shrubs, with simple, palmately lobed, or compound leaves. Flowers in axillary or terminal panicles, polygamous, with sessile or stipitate ovary, androecium 1-seriate, generally opposite the petals. Petals 2-4 between each pair of staminodes; anthers cylindrical, with a linear 2-hd blade; capsule globular, prickle or winged:—

Guazuma.
199. STERCULIA FCETIDA Linn.; F. I. iii. 155; F. B. E. D. S. 2824.
    Planted by roadsides and near temples.

    Behar; Chota Nagpur.
    A soft-wooded tree with papery outer bark.
    Keonji, karaunji, telhec' (Santal.), guhu, bah.

    Behar, Rajmahal Hills; Tippera, ConnHa; Udal;
    A white-barked tree. Hind. Udal; Santal. u
    XoZ.Sisi, pironja.

    Chittagong.

203. STERCULIA COLORATA Roxb.; F. I. iii. 146; F. B. E. T>. S. 2819.
    Chota Nagpur; Tippera; Chittagong; elsewhere F

204. STERCULIA ALATA Roxb.; F. I. iii. 152; F. B. E. D. S. 2806.
    Chittagong; often planted in other provinces.
    A tall handsome tree with buttressed base.
    Buddha narikel.

106. Heritiera Ait.

Trees, with simple leathery leaves, lepidote beneath.
small, 1-sexual, in axillary panicles. Calyx 5-, rarely 4- or -cleft. Petals 0. Stamens united in a column with a 2-celled anthers at the apex. Carpels 5-6, almost short; stigmas 5, thick; ovules solitary in each carpel.
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* i- i. 363; E. IX H. 134.
    Sundribuns.
The statement is frequently made that H. littoralis also occurs on the east. This apparently is not the case; at all events nobody has ever been able to find it in the Sundribuns, though it is over again been specially hunted for. The fruits of H. littoralis are smooth winged on the outer, keeled on the inner side and less prominently winged on the outer side than those of H. littoralis are.

107. Helicteres Linn.

Mr. Shrubs: leaves simple pubescence stellate. Flowers solitary or fascicled. Calyx tubular, often irregular, auriculate appendaged. Stamens united in a column adnate to gynophore, 5-lobed or 5-toothed at the apex; anthers 2-celled, and 1-celled, in groups at the apex of the column and the teeth. Ovary at the top of the column, 5-lobed; styles subulate, more or less united, slightly thickened and parallel twisted follicles. Seeds unberced; albumen.

$\xspace$ embryo with foliaceous cotyledons.

P. carpels spirally twisted.-------------------Isora

P. 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.


2. HELICTERES SPICATA Colebr.; F. B. I. i- 366.

Chittagong.

A shrub.

108. Pterospermum Schreb.

Trees or shrubs; leaves leathery, oblique below, penninerved, pleorlobed, usually 2-farious; tomentum stellate or sometimes lepidote. Flowers axillary and terminal, usually showy, solitary or together, bracteoles entire or laciniate, persistent or deciduous. Calyx of 5 more or less connate sepals. Petals 5, large, with the calyx. Stamens united in a short column,
BENGAL PLANTS.

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, coriaceous or woody, terete or angled, loculicidally 5-valved capsule. Seeds winged above, 2-seriate on the inner angles of the capsular chambers; albumen scanty or 0; embryo with plaited or crumpled cotyledons.

Capsules distinctly 5-angled; leaves large, broad. Capsules terete; leaves oblong-lanceolate, semi-sagittate. -

208. PTEROSPERMUM ACERIFOLIUM Willd.; F. I. lii- 158; F. B. i. 368; E. I, p. 1389.

Chittagong; N. Bengal: elsewhere often planted.

PTEROSPERMUM SEMISAGITTATUM Ham.; F. 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, laciniate 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, G-10-locular; style erect, stigma pinnate, 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. -

210. ERIOLAENA HoottBiAirA W. & A.; F. B. i. 370; E. *

Chota Nagpur; Bebar, on hills: often planted in other provinces.

A tree; Vernac, Bünddn, gua-goli, gu^kasi,
110. Pentapetes Linn.

Herbs or undershrubs with simple leaves. Flowers small, in lax panicles or clusters. Sejals elongate below. Petals 5, marcescent. Stamens 5, connate at the base; anthers 2-celled, extrorse. Ovary sessile, 5-locular; styles 5, free or connate at the base, ovules in each loculus 8–12. Fruit a loculicidally 5-valved capsule. Embryo straight.

Everywhere common.

111. Melochia Linn.

Herbs or undershrubs with simple leaves. Flowers small, in lax panicles or clusters. Sejals elongate below. Petals 5, marcescent. Stamens 5, connate below; anthers 2-lobed. Ovary sessile, 1-locular; style excentric, porous.

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 small, in dense axillary or terminal clusters. Petals 5. Stamens 5, connate below, 30nfluent 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.

113. **Abroma** Jacq.

   Trees or shrubs; *leaves* cordate or ovate oblong, serrate or not. *Flowers* in few-flowered leaf-opposed cymes. connate at the very base only. *Petal* 5, concave below, upwards as a cochleate lamina. *Stamen* connate in column, with 5 long ataminodea opposite the sepals, with 5 groups containing each 2-4, usually 3, fertile anthers 2-lobed, lobes diverging. *Ovary* sessile, 5-lobed; styles 5; ovules numerous in each loculus. membranous, 5-angled, winged, septicidally 5-valved eap . villous margins and truncate apex. *Seeds* numerous, copious; embryo straight.

215. **ABROMA AUGUSTA** Linn.; F. I. iii. 156; F. JJ. 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.
*Calyx* at first spathaceous, at length 5-tfd. *Petal* 5, con the base, lamina divided above into 2 narrow strap-shape *Stamen* connate in a tubular column, with 5 staminodes op 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 numerous. *Fruit* a woody, oblong, tubercled capsule-numerous; albumen copious; embryo curved.


   Often planted by roadsides and near tanks, but also . readily self-sown.


115. **Buettenia** Linn.

   Herbs, shrubs often climbing, or trees, frequently prickly; simple, entire, or lobed. *Flowers* minute, in much-bran
or terminal umbellate cymes. Sepals 5, connate below. Petals 5, with concave claw and long strap-like 2-fld limb. Stamens opposite the sepals alternating with 5 fertile stamens opposite the J.W. Anthers 2-lobed, lobes extrorse. Ovary sessile, 5-locular, entire or 5-fid; ovules 2 in each loculus. Fruit a globose!...septicidally 5-valved capsule, with persistent central n. St., ascending, solitary in each chamber; albumen y. Embryo with large, spirally convolute cotyledons.

Leaves glabrous, ovate-acuminate, longer than broad; a

Leaves pilous or tomentose, not longer than broad: pila, glabrescent, cordate-oblong, entire, jitate, isperd.


Behar, Bajmahal Hills.

BUETTNERIA HEIBRACHA Boxb.; P. I. 376.

Behar; Chota Nagpur; Orissa.

A tree.


Chittagong.

A climbing shrub, especially in secondary jungle or on exposed ridges.

Order XXY. TILIACE*.
Carpels 2-5, united in a free 2-10-locular ovary; styles connate or rarely partly or quite free, or stigmas sessile and as many as or connate; ovules 1 or more, if few pendulous from apex ascending from base, if more horizontal often 2-seriate, but from inner angle, anatropous with raphe ventral or lateral. fleshy or dry, indehiscent or dehiscent, sometimes by a 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 distin 2-valved

Sepals distinct:

Petals with a more or less adnate basal scale, inserted round base a raised torus; stamens springing from apex of torus:

Fruit not prickly, drupaceous:

Fruit prickly, small, globose, indehiscent or separating into cocci:

Petals without a basal scale, inserted directly [round stamens on contracted torus; capsule opening loculioidally, many-seeded

Petals rigid, white or sepaloid, almost always laciniate, induplicate-valv in bud; anthers linear, opening by slits; stamens arising in groups opposite the petals and alternate with the lobes of a 5-lobed torus; sepals distinct; fruit drupaceous

Trees; leaves entire, pinnately 3-5-veined; pubescence lepidote.

Flowers many, small, in large terminal or axillary panicles. Cm* campanulate, irregularly 3-5-fid. Petals 5, eglandular. Stamen* numerous, rising from a raised torus, many-seriate; filanæ* free; anthers subglobose; the inner series replaced by 5 lanceolate petaloid staminodes opposite the petals. Ovary 5-locular; styles subulate, slightly connate; ovules 2 in each loculus, 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; calyx* infundibuliform velvety; filaments slender; staminodes linear; as long as its adjacent leaf

LEAVES.

Grewia Linn.

Leaves entire, usually palmately 3-9-nerved; pubescent or S. Arua. Fruits oblong, rough with short stellate tomentum, sub-3-nerved at base; flowers involucrate; stigma distinct crustaceous rind; peduncles very short, as long as petioles. Drupe fleshy, wrinkled when dry, without a crustaceous rind;

Microcos. Dilatata, 5-lobed at base, falcate; leaves obliquely ovate-rhomboid, obtuse or abruptly short-pointed, almost always cordate;
hoary or only pubescent beneath; petioles not excpet
petioles ..............................................................

Stipules not auriculate at base:—

Peduncles at least twice as long as petioles, or
longer:—

Leaves ovate-oblong, apex long acute or acumi

Leaves rounded or obovate, apex obtuse or sho
pointed, margin double-serrate; buds oblong
ribbed:—

Leaves densely pubescent above as well as c
beneath; petals notched; stipules lanceolate
Leaves sparsely pilose or pubescent or at length
above; petals entire:—

Stipules lanceolate; flower-buds clavate; turbin
ate; a small tree..................................................
Stipules linear; tower-buds ovoid; drupes su
faintly 4-lobed; a dwarf shrub with woody s
ually emitting herbaceous, pubescent shoots

Peduncles slightly if at all exceeding the petioles; bu
or ovoid, smooth; leaves rounded, apex shoit
margin simply seriate:—

Leaves closely finely hoary beneath; stipules line

Leaves densely tawny-white tomentose beneam

\*Leaves narrow, 3-nerved at base, lanceolate or ovate-la
drupe fleshy:— [p. 281]

Leaves nearly glabrous; drupes didymous; peduncle m
than petiole:—

Leaves ovate-lanceolate; flowers over 1 in. across; fl
or small tree, leaves 4-6 in. long.........................
Leaves obovate-lanceolate; flowers about half an incn
a small twiggy shrub, leaves 2-3 in. long ..............

Leaves hoary or pubescent; drupes globose or subglobose.

Leaves finely pubescent above, closely hoary pubescent be
peduncles much longer than the petioles................

Leaves glabrescent above, densely tomentose but not
beneath; peduncles not much longer than the petioles...

222. GREWIA MICRO COS Linn. F. 15. i. 392; E. !• G. 682.

G. idmifolia F. I. ii, 591.
Chittagong.
A shrub.

Grewia pilosa Lamk.; F. B. I. i. BB8.; O. carenmosoja
F. I. ii. 587.
Behar; Chota Nagpur.

Grewia pilosa Lamk.; F. B. I. i. BB8.; O. carenmosoja
F. I. ii. 587.
Behar; Chota Nagpur.

A large shrub or small tree.

Grewia sclerophylla Roxb.; G. scabrophyllica F. I. ii. 587;
E. D. G. 708.
Behar; Chota Nagpur; Chittagong.

A shrub with large harsh leaves.

Grewia tillefolia Vahl; F. I. ii. 587; F. B. I. i. DM;
E. D. G. 714.
Behar; Chota Nagpur.
A medium-sized tree. Fernac. Dhamin, olat (c&al.)

Grewia excklsa Vahl; F. B. I. i. 385; E. D. G. 677.
A valuable plant. Fernac. Pharsa, phalsa, sukn (lima).

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.

Grewia sapida Roxb.; F. I. ii. 590; F. B. I. i. BB7.
Behar; Chota Nagpur; Orissa.
A small shrub sending up annual herbaceous shoots troni
a woody stock.

Grewia vestita Wall. G. asiatica var. vesta h. u- i. 317;
E. D. G. 673 partly.
Behar; Chota Nagpur; Orissa.

Grewia cinnamomea Gamble; E. D. G. 673 partly.
Chota Nagpur.

Grewia l^vigata Vahl; F. V. I. i. 389; L- 1G.
A. didyma F. I. ii. 591
BENGAL PLANTS.

Chota Nagpur; Orissa; Behar; N. Bengal; Chittagong.

A small tree or large shrub. *Hind Kath bum* > Kaki.

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 sar.*

234. GREWIA SALVI^EFOLIA* Heyhe; F. B. I. i. 386; *Orissa.* Behar, Monghyr hills; Chota Nagpur, common; Khurda.

A shrub or small tree. *Uriya Dhattika; Santas khorkhorendna; Kol. Bursu, cheli.*

235. GREWIA HIRSUTA* Vahl; F. I. ii. 587;* F. B. I. *Chota Nagpur.

A shrub.

118. Triumfetta Linn.

Herbs or undershrubs; *leaves* serrate, simple or lobed, p. stellate. *Flovers* small, in dense cymes. *Sepals* 0, 0. *cave. Petals* 5. *Stamens* 5, 10, 15 or more *Pringl* fleshy, lobed, glandular torus. *Ovary* 2-5-locular; *stigma* 5-toothed; ovules 2 in each loculus. *Fruit* 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 the sepals .........................................................

Leaves irregularly lobed, acuminate sepals stellate-tomentose. 

Capsules separating when ripe into 3-4 densely bristly cocci, usually 2-seeded:—

Leaves slightly hirsute; capsules and bristles glabrous. 

Leaves densely tomentose beneath, pubescent above; capsules torn the bristles more or less pilose.
236. **Triumfetta Neglecta** W. & A.; F. I. i. 396.

Tirhut; Behar.

237. **Triumfetta Rotunmfolia** Lamk.; F. B. I. i. 395.

Western Behar.


Common everywhere.


119. **Corchorus Linn.**

Heb. or Undeslirwbs.* leaves simple; pubescence stellate. axillary or leaf-opposed peduncles.

Se. 2>al\ y tall, eUow, x._ on

Seat* PeA A 4-5, eglandular. Stamens numerous, several-

Ooi3 laiety, 2n~ seriate and twice as many as the petals, arising

sting on Us; filaments free. Ovary 2-6-locular; style short,

^cull~ m bly a Stout 6ub smooth tuberculate or prickly,

Pim & 2~_5 vaIved capsule, occasionally with transverse dis-

cce; s embryo curved.

B lob -- cAPSule 3-M, lobes spreading; leaves without basal bristle-like

C/Auule thick, truncated, 6-angled, the alternate angles produced

info endings; stamens 15-20..........................*acutmgulu*.

C££pule rather slender, terete, not winged; stamens 5-10 ...tridens.

Be£k of capsule entire, erect:—

Capsule puberulous, shortly beaked, without transverse partitions

£tween the seeds; stamens 5-10..........................*Jasciadari*.

Capsule with transverse partitions between the seeds; stamens

many:—

tCapsules scabrous or aculeate, beak short; leaves without basal

lobes [p. 286]..........................*Triulocuithr*.
fCapsule glabrous, beak long; leaves with the lower parts prolonged as fine basal lobes [p. 285].

*Capsule globose, not beaked, muricate; leaves with lower parts prolonged as fine basal lobes [p. 285].

241. CORCHORUS ACUTANGULUS Lamk.; F. B. I. 398; B. I. 398; F. I. i. 582.

A common weed everywhere.
A spreading or ascending annual herb.

Tirhut.
An annual herb.

242. CORCHORUS TRIDENS Linn.; F. I. i. 398; B. I. 398; D. C. 1840.

An annual herb.

243. CORCHORUS FASCICULARIS Lamk.; F. I. ii. 398; E. D. C. 1858.

Orissa; Chota Nagpur; N. Bengal.

244. CORCHORUS TRILOCULARIS Linn.; F. I. 397; E. D. O. 1875.

Behar; Tirhut.
An annual weed.

245. CORCHORUS OLITORIUS Linn.; F. I. 581; E. D. C. 1861. C. decemangularis F. I. ii. 582.

Cultivated everywhere.

246. CORCHORUS CAPSULARIS Linn.; F. I. ii. 581; E. D. C. 1846.

Cultivated everywhere.

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 a disk, subaggregated in groups opposite the petals and alter with the disk-lobes when present; anthers innate; de terminal porous. Ovary sessile, 2-5-locular; style coiled ovules in each loculus numerous. Fruit a drupe with a hard stone, 3-5-celled or sometimes by abortion 1-celled, solitary pendulous in each cell; albumen fleshy; embryo With cotyledons.
Anthra blunt, or only one anther-cell sharply produced; flowers small, 1-3 sessile, glabrous:—

Ovary 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...*lucida*.

Anthers 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...*nejosus*.

Anther-tails reflexed; petals wide at base and narrowed towards apex...*Varumui*.

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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.* Badakia; *Hind.* Radak.


N. Bengal; E. Bengal; Chittagong.


Chittagong, common.

A tree. *Vernac.* Chekio (*Chittagong*).

250. *ELJOCARPUS 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. **Bengal Plants.**

251. **ELIOCARPUS.**

**Chittagong.**

A tree.

252. **ELIOCARPUS.**

Chittagong. **R** — **;** F. I. ii. 596; P. B. I. i. 405.

A tree.

253. **ELIOCARPUS.**


A tree.

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**Original Text:**

Herbs • **U**

Kennedia Linn. • Syn. •

Glands. **S** • X **S** • P • T •

Petals. **C** • W • R • C **U** •

Stigmas; ovules 5; free or united asafreo • 2 •

Staminal rings • free. **P** • < • Z • n • • 2 • L • 7 •

Petals. **C** • W • R • C **U** •

Stigmas; ovules 10 in • 1 •

Anther capsule • L • H • S •

Pendulous with raphe ventriculiform; stigmatic stumps •

as long as the albumen.

---

**Translated Text:**

Herbs; leaves linear or lanceolate; styles 5; capsules 5-celled. . . **Linum.**

Undershrubs; leaves elliptic-ovate; styles 3-4; ovules 3-4. **Reinwardtia.**

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**Translation:**

Herbs • **U**

Kennedia Linn. • Syn. •

Glands. **S** • X **S** • P • T •

Petals. **C** • W • R • C **U** •

Stigmas; ovules 5; free or united asafreo • 2 •

Staminal rings • free. **P** • < • Z • n • • 2 • L • 7 •

Petals. **C** • W • R • C **U** •

Stigmas; ovules 10 in • 1 •

Anther capsule • L • H • S •

Pendulous with raphe ventriculiform; stigmatic stumps •

as long as the albumen.
289. 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.

Order XXYII. MALPIGHUCEM.

Trees or shrubs; often climbing. Leaves usually opposite, stipules small or 0. Flowers regular or irregular, hermaphrodite or sometimes polygamous; pedicels articulate, usually racteolate. Disk usually obscure. Sepals connate in a partite calyx, lobes imbricate less often valvate, one or more 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 intorse. 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...
BENGAL PLANTS.

Winged samaras, less often (not in Indian species; Seed with usually membranous testa; albumen straight or more or less curved, cotyledons often uneq

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 an

123. Hiptage Gaertn.

Shrubs, climbing or sub erect; leaves opposite, entire, eglandular or with a line of intra-marginal glands; stipules 0. Flowers white, fragrant, with the 5th petal in terminal or axillary racemes or panicles; peduncles articulate pedicels 2-bracteolate. Calyx 5-partite, glands adnate to pedicel. Petals 5, silky, clawed, spreading or reflexed. Stamens 10, declinate, one exceeding the rest, all elements connate at the base. Ovary 8-locular, with appendages; styles 1-2 oirctinate, 2-1 rudimentary, ovules solitary in each loculus. Fruit of 1-3 samaras. Seed subglobose; embryo with thick unequal cotyledons.


Behar; Chota Nagpur; Chittagong: elsewhere planted. A very heavy woody climber, with fragrant H. and Beng. Mahadeo-lata; Beng. BasantU Baromali.


Shrubs, usually climbing; leaves opposite, entire, eglandular or with a line of intra-marginal glands; stipules 0. Flowers small, white or yellow, in axillary or terminal or axillary racemes or panicles; peduncles bracteate; articulate pedicels or 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 flatthe back, winged laterally; styles 3, stigmas capitate; ovules solitary. Fruit of 1-3 samaras, the nucleus sometimes or crested at the back and surrounded by a wide oblong or cicular marginal wing. Seeds oblong, subteyete; embryo stiag with equal cotyledons.
257. ASPIDOPTERYH ROTUNDIFOLIA A. JUBB. A. n. U. ^ TM®
  A slender climber.

Order XXYIII. ZYGOPHYLLACEA.

Herbs or shrubs, rarely trees, branches often articulate. Leaves opposite or alternate by suppression, 2-foliolate or pinnate, reticulate, leaflets entire, not dotted, petioles 2, persistent, occasionally spinescent. Flowers hexagonal, "Aphrodite, regular or irregular, solitary or paired, axillary, TM% 2-bracteolate. D却X-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 whors, each equal in number to the petals, the filaments of ten alternately long and short, occasionally some of them-similar, usually with a basal or median scale, those of the whorl opposite them often adnate to the bases of the petals; anthers 5 or 4, alternating, dehiscence longitudinal lateral. Carpels usually 5, rarely fewer or more, united in a sessile or occasionally stipitate, 2-12-lobed, -angled or -winged and 2-12-locular ovary, the locules sometimes partially transversely sepalate; style terminal, rarely subgynobasic central, angled or furrowed with angles stigmatic, with simple discoid stigma or with stigmas 5 free; ovules 2-many, usually 1, ascending or pendulous, raphe ventral. Fruit dehiscent or indehiscent, of 2-10 free or united, often spiny cocci, very berry-like (Peganum sometimes) berry-like. Seeds usually pendulous, solitary, very rarely 2 or more, oblong or linear; albumen nesny or homy but scanty, sometimes 0; embryo as long as the seed, straight or curved, leaves opposite, abruptly pinnate, unequal; stamens 2-seriate, usually some fertile; flowers pseudo-axillary. Leaves alternate, entire or multifid; stamens 3-seriate, without anthers; flowers leaf-opposed.

125. Tribulus Linn.

Prostrate herbs, diffusely branched; leaves opposite, unequal, abruptly pinnate, usually silky; stipules 2, usually some.
solitary, white or yellow, on pseudo-axillary peduncles. Petals 5, patent, caducous. Stamens 10, inserted at the shorter of a 10-lobed annular disk, alternately short and long, glandular externally, the 5 longer opposite the petals lobed; filiform. Ovary sessile, hirsute, 5-12-locular and style short pyramidal or filiform, stigmas 5-12; into or 2-5 superposed in each loculus. Fruit 5-angled, 5-12 tubercled spinous or winged indehiscent cocci. Secondary in each coccus, obliquely pendulous; albumen with ovate cotyledons.

Flowers 1-2 in. across, their peduncles as long as or or 2-5 superposed in each loculus. Fruit 5-angled, 5-12 tubercled spinous or winged indehiscent cocci. Secondary in each coccus, obliquely pendulous; albumen with ovate cotyledons.

Flowers 1-2 in. across, their peduncles as long as or is or 2-5 superposed in each loculus. Fruit 5-angled, 5-12 tubercled spinous or winged indehiscent cocci. Secondary in each coccus, obliquely pendulous; albumen with ovate cotyledons.

Flowers 1-2 in. across, their peduncles as long as or its leaves,.......................... C. Bengal, only near Calcutta, introduced and rare. A prostrate herb. 259. TRIBULUS TERRESTRIS Linn.; F. B. I. i. 423. Tirhut; Behar; Chota Nagpur; Onssa. A prostrate herb with spiny fruits. Vernac. Cra

T. lanuqinosus F. I. ii. 401.

This genus, following the advice of Hooker in the Index of *India is retransferred from *Eutacea to *Zyyophyllac. One great objection to placing *Petjamnn in *Rntacete is the absence of pellucid g
Order XXIX. **Geraniaceae.**

Herbs, sometimes climbing, rarely shrubs, very rarely trees, opposite or alternate, simple, occasionally peltate, usually or lobed, or compound sometimes sensitive; stipules usually illary. Disk inconspicuous or gla, idular. Sepals 5, rarely 4 or or connate, imbricate or rarely valvate, the upper sometimes red. Petals 3–5 or 0 hypogynous or subperigynous, uninated, occasionally contorted. Stamens usually 5 1-senate in Regular flowers, 10 or 15 2–3-seriate in regular flowers, frequently some deformed; filaments filiform or dilated, free or connate below; anthers 2-celled versatile; dehiscence longitudinal *****. Carpels united in a 3-5-lobed and 3-5-celled ovary, rarely 2-4. Produced upwards with the axis in a style-bearing beak or styles free or only partly connate; stigmas capitate or linear; raphe ventral. Fruit capsular 3-5-lobed, rarely berry-like and indehiscent or late of dehiscence; valves often separating elastically. Seed often solitary, pendulous or horizontal; albumen rarely fleshy, usually scanty or 0; embryo straight or curved.

**Flowers** regular or subregular; sepals herbaceous, not spurred, imm. beaked, the valves when dehiscing rolled elastically upwards; leaves simple; herbs. Geranium. Geraniums on the torus 5, alternating with the subregular petals; capsules beaked; stamens all perfect; leaves compound:—... Oxalis. Valves cohering with axis; leaves digitately compound... Oxalis. Valves detaching from axis; leaves pinnately compound... Biophytum. Biophytum.

Fruits of indehiscent berries; often 5 of the stamens reduced to staminodes; leaves pinnate; trees... Impatiens. Biological petals connate in pairs; fruit capsular, elastically dehiscant... Impatiens. Impatiens... Hydrocera.
127. Geranium Linn.

Herbs or undershrubs; leaves opposite or alternate, pinnate or undivided; stipules 2. Flowers regular, on axillary or distichously flowered or umbellate peduncles. Sepals 5. Petals 5, by imbricate, alternating with 5 glands. Stamens 10, & alternately 5 fertile, 5 imperfect, free or shortly connate at the base. Ovary 5-locular and 5-lobed, beaked; styles 5, stigmas terminal, or laciniate; ovules 2 superposed in each loculus. Trilocular capsule, with a solitary seed in each cell; carpeles ventrally splitting and often separating septifragally from their beaks coiling elastically upwards. Seeds With scanty or 0; embryo with incumbent imluplicate or cotyledons.


A small straggling herb; flowers rose-eleonie purple eye. Hind. Bhj'mda.

128. Oxalis Linn.

Herbs, rarely undershrubs, with acid juice; leaves alternate, ternately digitate, often subsensitive; stipules 2. Flowers regular, on axillary 1- or more-flowered peduncles. Sepals 5. Petals 5, hypogynous, contorted; disk without glands. Ovary 5-locular and 5-lobed; styles 5, stigmas terminal, or laciniate; ovules 1 or more in each loculus. Trilocular capsule with persistent valves. Seeds elastically opening outer coat and a crustaceous testa. Fleshy; embryo straight.


A small "shamrock" with yellow flowers. Amb6ti, chalmori; Beng. Amrul, chuka-tvip" Tandi chatom arak'.

129. Biophytum DC.

Annual or sometimes perennial herbs or undershrubs or branched; leaves usually sensitive, compound, even-F
GER A NIA OEM.

**Averrhoa** Linn.

130. **Averrhoa** Linn.

**Fruits** sharply angled; **seeds** arillate. **C. a. r. a. m. b. Carallaba.**
266. AVBRRHOA CARAMBOLA Linn.; F. I. ii. 450; F. B. I. 1646.

Planted rather frequently everywhere; occasionally self-sown.


Planted everywhere; and often occurring self-sown.

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, resinate, 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, 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 each loculus. Fruit a 5-valved loculicidal capsule, the valves separating elastically from the axis. Seeds tubercled or smooth, hairy or glabrous; albumen 0; embryo straight.

268. IMPATIENS BALSAMINA Linn.; F. I. i. 651; F. B. I. 454.

Chota Nagpur, very common near police outposts and villages, but also now extending far into the forests.

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 5-locular; stigmas 5, sessile; ovules 2-3 in each loculus. Fruit
Spacfcous indehiscent, with a bony truncate 5-celled stone. Sc* in each cell solitary, curved, corrugated; albumen u, en Ary 0 with rather thick cotyledons.

* HYDMCMA TUUXOEA W. & A.; F. B. I. i. 483. I » ^ , 
** 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 compqmid, str Pule 0. mowen usually hermaphrodite and regular, in a 4 H * y or famtal simple or panicked cymes, rarely racemose. J*.* ^ l a r, c r e a t e o r l o b e d, sometimes considerably ? f j t W * 4-5, almost always imbricate, free or connate. Petal, 4 W, 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<riBcnoe longitudinal, introrse. Car^U 4-5, free or eonnata, ui Superior o v a r y s t i l e s a s m a n y, l=ee or more or less connata, ' str gmas terminal, entire or lobed; ovules usually 2 in each cell, WBitMnB numerous, superposed on the inner ** ?ruUot 1-4 dehiscent cocci, or a capsule, «f f ^ J * and drupaceous or ben-y-like and then often luge. 6 « » f * ^ Solt* W Y in the cells; a bulben fleshy or 0; embryo staught or curved.

-ULEATA -

Flowers usuall y boi k<to F. L L 61b ; carpels 2-ovulecl:--
Ovary deeply 2-5-le -lar ventral, more or less free;
CarPels dehiscent; sta ^ k 3; sari flowefs polygamous; leaves 6-
morefnKt * n . . . . . . . . . . . Zanthoxyium.

<io-iosiolate; stem pnckil.
Ovary entiw, style simple; carpels syncarpous indehiscent,
1-3-toliolate:—
Stem prickly; flowers monoecious; petals and stamens e a ^ ^ dalla.

Stem unarmed; flowers polygamous; petals 4, stamenS 8 A cronychia.

Flowers usually hermaphrodite; ovary entire; style simple; iiui

Indehiscent : —
BENGAL PLANTS.

Style short persistent; ovules solitary in each cell; leaves pinnate ........................................................

Style articulate at top of ovary, deciduous:—

Ovules 1-2 in each loculus; stamens 10 or fewer:—

Unarmed plants; leaves pinnate with leaflets alternate.

Filaments dilated below, stamens 8-10 ................................................

Filaments linear-subulate, stamens 10 ........................................

Petals valvate; cotyledons leafy corrugated; filaments subulate, stamens 10 ................................................

Armed plants; leaves pinnate or 3-foliolate with leaflets opposite, or 1-foliolate:—

Leaves 3-9-foliolate, sometimes more-foliolate, leaflets opposite.

Calyx distinctly lobed:—

Calyx 3-lobed; stamens 6; leaflets always 3 rarely 5

Calyx 4-5-lobed; stamens 8 or 10; leaflets rare rarely 3

Calyx cupular with entire or obscurely 4-6-toothed; stamens 8 or 10; leaflets always 3

Leaves 1-foliolate:—

Anthers linear-oblong, stamens 8-10; disk elongate

Anthers ovate-cordate, stamens 5-8; disk cup-shaped

Ovules more than 2 in each loculus; stamens 10 or more in trees with large fruits:—

Stamens 10-12; ovary incompletely 5-li-locular; rind of fruit woody; flowers polygaous

Stamens 20-60; ovary usually many-locular; flowers phrodite:—

Leaves 3-foliolate; stamine near i 8n 01 °Jrle 101111 loxular; rind of fruit woody

Leaves 1-foliolate; stamens or ovary many-cellular

133. Zanthoxylum Linn.

Shrubs or trees, usually armed with stout prickles; leaves alternate, 3-foliolate or imparipinnate; leaflets usually opposite, en or crenate, often oblique; stipules 0. Flowers small, in or terminal peduncled cymes, often 1-sexual. Calyx 3-8-n, rarely absent. Petals 3-5, rarely absent, imbricate or induplicate; cate-valvate. Stamens 3-5, hypogynous, or reduced to scales &
RUTACEÆ.

flowers; disk small or obsolete. Ovary in * flower rudimentary or abortive. Ovaries of 1-5 oblique Mocular carpels, styles sublateral, free or connate above, stigmas capitate; ovules, usually collateral. Fruit of 1-5 globose, compressed or fleshy, 1-7-seeded carpels dehiscing by the ventral suture, often pendent by a long funicle; testa shining, albumen fleshy; embryo straight.

0 ZANTHOXYLUM BUDRUNGA Wall.; F. B. I. i. 417. Chittagong.
A tree armed with prickles; leaves pinnate; leaflets with large glands in the crenature of the blade. Vern. Badrang.

134. Toddalia Jass. Kauh., usually undent, stems prickly; leaves pinnate, petioles prickly; leaflets sessile; stipules 0. Flowers medium or small, in axillary or terminal cymes or panicles. Calyx 4-lobed or -partite. Petals 2-5, imbricate or valvate, inserted in flowers 2, 4, 5, or if 8 with alternately fertile and sterile filaments, inserted at the base of a distinct or obsolete disk, or in flower rudimentary or 4-lobed, in flower oblong or globose, 2-7-locular; style short or 0, stigma capitate, ovules 2, either superposed or collateral in each cell. Fruit globose or lobed, coriaceous or fleshy, indehiscent, 2-7-seeded. Seeds angular, reniform; testa coriaceous, albumen fleshy; embryo curved.

2 Toddalia occurata F. I. i. 616. Orissa.

135. Acronychialbrst. Trees, unarmed; leaves opposite or alternate, 1-, rarely 2-4-lobed leaflets entire; stipules 0. Flowers medium or small, pinnate, in axillary and terminal cymes or panicles. Calyx 4-lobed, imbricate, sometimes accrescent. Petals 4, valvate, leathery, fading. Stamens 8, inserted below a thick disk. 8-10 filaments alternately longer and shorter.
BENGAL PLANTS.

33. BENGAL PLANTS.

Tomentose, inserted in hollow of disk; style terming, 4-furrowed; ovules 2 superposed in each loculus.

Cent drupaceous, or dehiscent loculicidally valved, 4-celled. 1-2 in each cell, often pendulous from the funicle; testa albumen fleshy; embryo straight.

272. ACRONYCHIA LAURIFOLIA Bl.; F. 13.i. i. 498.

Chittagong.

A small tree or large shrub.

136. Glycosmis Coir.

Shrubs, rarely trees, unarmed; leaves 1-foliolate or pinnate; leaflets alternate; stipules 0. Flowers small, in rarely terminal panicles. Calyx 4-5-partite; lobes broad, dilated. Petals 4-5, imbricate. Stamens 8 or 10, free, filaments dilated below; anthers small, with a gland at back or tip. Ovary 2-5-locular; style very persistent, stigma capitate; ovules solitary, pendulous in loculus. Fruit small, dry or fleshy, 1-3-seeded, berry-like, oblong, testa membranous; albumen 0; embryo with thick cotyledon.

Ovary connate at base with disk; leaflets usually 3. Ovary constricted at base and free from disk; leaflets usually 5.

137. Clausena Burm.

Shrubs or trees, unarmed; leaves imparipinnate, leaflets branous, alternate; stipules 0! Flowers small, in terminal axillary cymes racemes or panicles. Calyx 4-5-lobed or 4-partite. Petals 4-5, free, membranous, imbricate. Stamens 8 or inserted outside an elongated disk; filaments alternately shorter and longer, dilated or arched and concave below the narrow style. Ovary stipitate, 4-5-, rarely 2- or 3-locular; style usually distinct.
deciduous, stigmas obtuse entire: ovules 2; collateral or
berry-like 9 mm each loculus - Fruit small, oblong or globose,
branch 5-celled - Seeds 1-2 in each cell, oblong; testa mem-
o; embryo with large equal cotyledons.

Usually 7-19 umbel inflorescence and leaves glabrous; leaflets 5-9
h hardly oblique; flowers usually 4-, rarely 5-merous

Ovary more or less pubescent, leaves and flowers
more or less pubescent; leaves 15-30;
leaves and inflorescence more or less pubescent; leaflets 15-30;
Leaves lecious: ovary 4-celled. - - - - - excavata.

Necemes axillaries, 4-merous; all parts softly pilose; ovary glabrous; flowers
'canets 5-17. - - - - - u.fruitkost.a.


Amorys
Jtetyphyila F. I. ii. 248.

Chattagong. 5 Chota Nagpur, Singbhum.


Chattagong 5 Chota Nagpur, Singbhum.


Cookie punctata F. I. ii. 382.

A small glabrous tree. Vernac. Wangpi (front the

138. Murraya Linn.

Shrub. Ornate tre es., unarmed; leaves imparipinnate; leaflets
y axil" leaf or cuneate; stipules 0. Flowers
"5 to V and in axillary cymes or terminal corymbs. Calyx
mately shorter and longer. Ovary
Towed upwards into the long deciduous style.
stigma capitate; ovules 1, or 2 superposed or collated in each loculus. Fruit 1-2-celled, 1-2-seeded, oblong or ovoid, beh
Seed woolly or glabrous; albumen 0; cotyledons large equ

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; E. D. M. 797.
    Chota Nagpur; Behar.
    A bush, or sometimes subarboreous. Beng. KanH^1
    Marchula.

279. MURRAYA KOENIGII Spreng.; F. B. I. i. 503; E. »-
    Bergera Koenigii F. I. ii. 375.
    Chota Nagpur; Behar; Bengal^ i
    A small spreading tree. Beng. Barsanga; Bars

139. Micromelum Bl.
    Trees, unarmed; ZeatJesimparipinnate; leaflets alternate, ^
    stipules 0; Flowers in large terminal flat panicles. Od
    shaped, 3-5-toothed or -lobed. Petals 5, free, thick, valv@ 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, w »
    spirally twisted septa, usually 1-2-seeded. Seeds oblong J
    membranous; albumen 0; cotyledons leafy, corrugate.

280. MICROMELUM PUBESGENS Bl.; F. B. I. i-. ^Sttgerrina F. I. ii. 376.
    Chittagong; E. Bengal, Dacca; N. Bengal, D^a^
    Chota Nagpur, Singbhum.

140. Triphasia Lour.
    Shrubs, armed with strongish straight spines; leaves ^te «j*
    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. 8We
    inserted round the fleshy dink, free; filaments dilated be
    Ovary ovoid, 3-locular, narrowed into the slender deciduous
303

**Fruit**  P. *e, 3-lobed; ovules solitary in each cell.

**Embryo**  with mucilage; testa coriaceous; albumen 0; cotyledons.

**Shrub**  often armed with spines; leaves alternate, orbilolate; leaflets usually opposite, petiole

**Calyx**  4-5 sepals lanceolate or -partite. *Petals* 4-5, imbricate. *Stamens* 8 or 10, and 1-6 united; filaments subulate; anthers outside the disk; style short, stigma capitate or obtuse; ovules 1-2 in each loculus. *Fruit* large, ellipsoid, berry-like, 1-4-celled and 1-4-seeded in mucilage; albumen 0; cotyledons fleshy, equal.

**Shrubs or trees**  often armed with spines; leaves alternate, 3-foliolate; leaflets usually opposite, petiole

**Calyx**  cupular, mouth entire or obscurely 5-partite. *Petals* 5, free or thick, imbricate. *Stamens* 8 or 10, and 1-6 united. *Fruit* large, ellipsoid, berry-like, 1-4-celled and 1-4-seeded in mucilage; albumen 0; cotyledons fleshy, equal.

**LuYunga**  A small glabrous spiny tree. 

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**LIMONIA ACIWSIMA** Linn.; F. B. I. i. 507; E. D. L. 362. - *crenulata* F. B. I. ii. 381.

- Behar; Chota Nagpur.

A small glabrous spiny tree. *Hind. Beli, belsian (Chota Nagpur); Viriya Bharna.*

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**LuYunga**  Ham.

**Leaves**  arm ed with axillary spines; leaves 3-foliolate; petioles Connate, nearly throughout, in a stout deciduous, stigma capitate; each loculus. *Fruit* large, ellipsoid, berry-like, thick leathery rind. *Seeds* 2-3, large, ovoid; testa

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**LuYunga**  Ham.
BENGAL PLANTS.

283. LUVUNGA SCANDENS Ham.; F. 1*.

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. Flower:
axillary, solitary or fascicled. Calyx cup-shaped, or
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 oblique
posed in each loculus. Fruit ovoid or subglobose, berry
contracted at the base, rind coriaceous. Seeds
much compressed; testa membranous; albumen
fleshy, equal.

284. PARAMIGNYA CITRIFOLIA Hook, f.; F. 1*.

citrifolia F. I. ii. 379.

Chittagong.

A branching, rigid, spiny shrub.


Shrubs or trees, armed or unarmed; leaves alternate,
coriaceous, evergreen, entire or crenate; stipules
stipule-like scales belonging to undeveloped buds in
base of the petioles and spines. Flowers in axillary
rarely solitary, or in axillary rarely terminal corymbs
bract 1 in tube, the disk; filaments subequal or alternately shorter and long irregularly connate; 15-20, inserted outside
irregularly connate; 15-20, inserted outside
filaments subequal or alternately shorter and long;
Irather short, cordate at base. Ovary 2- or 4-locular.
rarely 3- or 5-locular; style stout, deci-
irregularly conuate; 15-20, inserted outside
and 1-5-seeded. Seeds oblong, large; albumen 0; embryo
fleshy cotyledons.


A. IG01. Limonia monophylla F. I. ii. 378.
Behar; Orissa.

305

Uriya arguni. /145. Feronia Gaertn.

Himbrid perfect, UCate, spreading. Stamens 10 or 12 a few sometimes im-

deciduous. Petals 5, rarely

valvous, large, flat, locular, at length locular; style 0, stigma oblong, fusiform, mero-

marius, many-seriate, crowded on the at length

with p. acen. kas. Fruit large, globose, 1-celled, many-seeded, l\essed; a. men o

* 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-

b;&; UHt/a Koeta ; Santal. Kainta. The Wood-Apple,

* Elephant-Apple.

146. ^gle COIT.

spikes; Zeave* alternate, 3-foliolate; leaflets

J stipules 0. Flowers large, white, in

4-5} i^ panicles. Call x small; 4-5-toothed, deciduous. Petals

minim ed, spreading. Stamens numerous (30-60), inserted out-

sk; filaments free, short, subulate. Ovary ovoid, celled;

loculi peripheral round a thick axis; style short;

long or fusiform, deciduous ; ovolves numerous,

y seeded (wi^rindlar 1 ; woody. Seeds oblong,

ned in acid pulp ; testa mucilaginous and

nien 0; embryo with thick fleshy cotyledons.

EGLE MARMELOS Corr.; F. I. ii. 579; F. B. I. i. 516;

E - D. A. 534.

Common everywhere.

A small deciduous spiny tree. Hind. Bel, siri-phal;

Beng. BCIL, vilva. The Bael-Fruit.
147. **Citrus** Linn.

Shrubs or trees, usually armed with spines; leaves alternate, 1-foliolate, coriaceous, evergreen, petiole usually winged; s

*Flowers* axillary, solitary or in small cymes or panicles, ri-
cupular or urceolate, 3-5-fid. *Petals* 4-8, linear-oblong, thic-
cate. *Stamens* numerous (20-60), inserted outside the laig
filaments irregularly polyadelpous below, bundles corpre-
gista at the base. *Ovary* many-locular; style stout, deciduous,
capitate; ovules 4-8, 2-seriate in eachloculus. *Fruit* larger,
branous or globose, berry-like, fleshy, many-celled, with mem-
septa; cells few-seeded and filled with transverse fusiform

*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 usua

skin and mamiilate; juice subacid (*typica*) or very acid :

Leaflet ovate; petiole distinct, margined or winged; fruit

Leaflet elliptic-oblong; petiole very short, linear or slig

fruit small........................................

Twigs greenish-white; flowers white, always hermaphrodite,

usually broadly winged; fruit medium, with usually thin skm

mamiilate........................................

Young shoots and nerves of leaves beneath pubescent; flowers w

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. TMed<

F. I. iii. 392 partly.

Cultivated not infrequently.


288/3. Var. **ACIDA** Brandis; F. B. I. i. 515; E. V. C

C. *acida* F. I. iii. 390.

Cultivated extensively in numerous forms, the two chief

being the *Pati-nimbu*, or " common round Lime
the Kagg-nimbu, or "long small Lime"; the latter is especially used.

289

B 8ubh* B 9q. Nimbu. The Indian Lime.

* CITRUS AURANTUM Linn.; F. I. iii. 392; F. B. I. i. 515; K T>. C. 1232.

Cultivated, but only thrives well in the western parts.

A snial 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;

Hindt, Naran S, The Orange.

* CITRUS DECUSIANA Linn.; F. I. iii. 393; F. B. I. i. 516; K D. C. 1263.

Cultivated very largely.

A trees 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.

Vees o shr bark almost always bitter. Leaves alternate, rarely simple, often very large; stipules rarely small or polygamous. Sepals united in a 3-5-lobed calyx, lobes axillary. Disk annular or elongated, simple. Petals 3-5, very rarely 0, hypogynous, Stamens as many or twice as many as petals numerous; filaments inserted at base of disk, free, introror. Sepals united in a superior, usually deeply lobed rarely ovary; styles 2-5, free or more or less united, each usually solitary, erect or pendulous; albumen fleshy, rarely dehiscent longitudinal. Fruit 2-6 separating indescent carpels, occasionally same-

s 8 e Usual or dehiscent capsular, sometimes indescent drupaceous*. Usually solitary, erect or pendulous; albumen fleshy, rarely dehiscent straight or curved.

A ves un equally pinnate; calyx 5-fid; ovary deeply lobed; fruit of 1-5

Ailanthus.
BENGAL PLANTS.

- Leaves 2-foliolate; calyx 5-partite; ovary entire; fruit a 1\textsuperscript{o}f\textsuperscript{ly} oily, 1-seeded drupe; a small spiny tree [p. 307]

148. Ailanthus Desf.

Tall trees; leaves very large, alternate, small, polygamous, in terminal or axillary panicles. Petals 5, valvate; disk 10-lobed. In \textit{i} flowers 10, in \textit{?} flowers 2-3; filaments short or \textit{j} scales 0. Ovary 2-5-partite and 2-5-locular; styles \textit{p} ovules solitary in each loculus, semianatropous. Single-seeded samaras; wing very large, membranous; albumen scanty; embryo with leafy cotyle


149. Balanites Del.

Shrubs or trees, armed with spines; leaves coriaceous, leaflets entire. Flowers small, green, in axillary cymes. Segments 5, imbricate, deciduous. Petals 5, imbricate; disk entire or faintly lobed. Stamens 10, inserted outside the filaments filiform. Ovary globose, entire, 1-locular; style subulate; stigmas minute, free or united; ovule solitary. Fruit a large fleshy oily 1-seeded drupe. Seed albumen 0; embryo with thick oblong corrugate cotyledons.

292. BALANITES ROXBURGII Planch.; F. B. I. i.


Order XXXII. OCHNACEJE.

Trees or shrubs, juice watery. Leaves alternate, simple, pinnately compound; stipules 2, free. Flowers regular, hermaphrodite, bracteate, often showy, in terminal panicles or umbels.
or in axillary or umbels or fascicles, rarely axillary solitary. Disk 0, 4-5, rarely 6, elongation of torus often enlarged after flowering. Sepals hypogynous, imbricate, persisting. Petals 5, rarely 4 or 10, free, deciduous. Stamens 4-5 or 8-10 or many; basifixed or inserted on the disk when present, persistent; anthers decious; dehiscence longitudinal lateral or apical or collateral. Flowers united in a superior ovary, short and 2-locular, 1-locular, and 2-10-locular with placentas axial occasionally simple or united in a superior ovary, short and 2-locular, 1-locular, parietal or intruded; style subulate acute at apex, stigma terminal; ovules in each cell each or on each placenta, ascending or rarely ventral. Fruit indehiscent, drupaceous or berry-like, pyrene 1-4-seeded, or a dehiscent 1-5-celled. Seeds solitary or few, less often numerous; embryo usually straight.

150. Ochna Linn.

Trees stipulate; leaves alternate, simple, almost always serrate; umbels conspicuous, yellow, bracteate, in panicles or thyrsoidea 5, subpetaloid, persistent. Petals 5-10, deciduous; filaments short or long, persisting; anthers deciduous. Ovary 3-10-locular; styles connate below or throughfronitiolata, capitellate; ovules solitary in each cell, 

Leaves or cr s, leaves alternate, simple, almost always serrate; flowers -75 in. across, in axillary racemes; a tree squarrosa. 

Leaves 16 or 6er coarsely toothed; 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. XJiriya Koniari. 

9y4 - OCHNA PUMILA Ham.; F. B. I. i. 524; E. D. O. 2. 

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 polygnamous or subdioecious, small, 11 racemes or panicles. Disk usually conspicuous, annular or cup-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-locous or globose ovary with axial placentas; ovules 2 rarely 1 in each loculus always from in*cr angle, usually attached above middle of cell or pendulous collateral, rarely ascending from base, anatropous with raphe ventral. Fruit indehiscent drupaceous with 3-5-pyrenes, rarely dehiscent pseudocapsular. Seeds solitary, pendulous, with membranous testa; albumen 0; embryo with usually membranous complicate rarely with fleshy cotyledons.

Drapes trigonous, valvately dehiscent, pyrenes separating ...Boswepfl*
drupes globose or ovoid, indehiscent, pyrenes not separating:—

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 each loculus. Fruit ultimately separating 1-seeded

152. GarugaBoxb.

Pinac, with pubescent, young branches; leaves alternate, imparipinnate, crowded near ends of branches; leaflets opposite, cronulato; Mowers polygamous, in much-branched panicles. Petals attached to calyx-tube, induplicate-valvate. Stamens 10, equal, attached to calyx-tube at margin of disk; filaments hairy 4-5 U-shaped, with 2 in each loculus. Petals 4-6, short, spreading or alternately exed, usually valvate; disk annular crenulate. Stamens 8-12, equal, inserted at base of disk. Ovary free, ovoid or sub-globose, 3-5-locular; style very short, stigma 3-5-lobed; ovules 2 in each loculus. Fruit globose or ovoid drupe with 3-5 1-seeded 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. D. B. 143.

Chotanagpur; Chittagong.

153. Bursera Linn.

Trees with balsamino, alternate, imparipinnate, stipules 0. Flowers hermaphrodite or polygamous, short-branched panicles. Calyx small, 4-6-toothed or reticate; teeth imbricate. Petals 4-6, short, spreading or alternately exed, usually valvate; disk annular crenulate. Stamens 8-12, equal, inserted at base of disk. Ovary free, ovoid or sub-globose, 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, each 1-seeded. Seed with a membranous testa; albumen 0; embryo contorted, usually 3-lobed cotyledons.

BURSEERA SERRATA Colebr.; F. B. I. i. 530; E. D. B. 941.

Limonia pentagyna F. I. ii. 382.

Chota Nagpur; Orissa; Chittagong.

Order XXXIV. MELIACEE.

Trees or shrubs. Leaves alternate, pinnately compound, rarely simple; leaflets generally oblique at the base; stipules 0. Flowers regular, hermaphrodite or polygamo-dioic, usually in axillary panicles. IHsk tubular or annular,
BENGAL PLANTS.

Leaflets coarsely serrate, rarely entire; fruit a drupe; seeds with fleshy albumen and thin cotyledons; ovules in each cell 1-2.

Fruit elongated; calyx 5-partite; petals imbricate; flower globose; calyx 5-toothed; petals valvate; style rather shorter than the tube, 2-celled, included or exserted; dehiscence longitudinal.

Carpels united in a usually superior 3-5-locular ovary; style simple, stigma disciform or capitate; ovules rarely collateral or superposed, very rarely solitary, from inner or outer raphe ventral. Fruit dehiscent or indehiscent, capsular drupaceous or berry-like. Seeds sometimes arillate, without albumen or with albumen fleshy; embryo flatish.

Seed not winged:—[p. 313]

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 each cell of the ovary;—

Anthers short; disk cylindric longer than ovary;—

Chisocheton—

Flowers and staminal tube globose or turbinate; style shorter or 0:—
Anthers included; filaments quite united; petals 3 Anther exserted; filaments free towards apex; petals Anther included; style 0;—

Heynea—

Anthers included; style 0;—

Aglais—

Anthers exserted; style distinct;—

Walsura—

Heynea—

* Fruit a berry, indehiscent; petals 5:—
Anthers included; style 0;—

Aglais—

Anthers exserted; style distinct;—

Walsura—

* 

Species

Undescribed objects not assigned to any species include 

WaWura are connate, in two or three 

(including the only species found within our area) they are free.
MKLU ACK. K. 154. Melia Linn.

Entire or pinnately or 2-3-pinnately compound; leaflets pinnately or stellately pubescent; stipules 0. Flowers free* in Panicles* imbricately 5-6-lobed. Petals cylindrical, imbricate; disk annular. Stamens united in athers 10-12, included or partly exserted, short, attached near top of the Ube dilated below and above, 10-12-striate and toothed; style slender nearly as long as locular; ovules in each loculus 2 super-

Rt
d i

Azedarach. Azadmichta.

Planted.

* See footnote on opposite page.
**BENGAL PLANTS.**


Planted and spontaneous in all the provinces.

A tree with dark wood and bitter leaves and bark, and *Hind.* Nún. The Margosa or Neem.

155. Cipadessa Bl.

Shrubs or small trees; leaves imparipinnate; leaflets opposite, nearly so, serrate or entire; stipules 0. *Flowers* subglobose axillary peduncled panicles. *Calyx* small, cupular, *Petals* 5, oblong, rather short, free, spreading, valvate. 8 stamens connate in a deeply 10-lobed tube, adnate below to the disk, lobes linear 2-fid at the tip; anthers 10 short subapically inserted between the lobes. *Ovary* 5-locular, the cells with calyx-lobes; style rather short, stigma clavate-cupular, 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.


Chota Nagpur; Orissa.

A much-branched shrub.

156. Chisocheton Bl.

Trees or shrubs; leaves imparipinnate, opposite or subopposite, leaflets more or less oblique; stipules 0. *Flowers* polygamous, numerous, occasionally in spicate racemes, usually in divaricate branched supra-axillary or rarely axillary panicles. *Calyx* amplexicaul, cupular, 4-5-toothed. *Petals* 4-5, rarely 6, connate below, *K* 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 as and alternate with the lobes, included or 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 subglobose 2-4-celled, loculicidally 2-4-valved capsule; valves coriaceous *Seeds* usually enclosed in a partial albumen 0; with peltate cotyledons.

Chittagong.


Hисочетон Дыхсокилиофус Курц; F. B. I. i. 551.


157. *Dysoxylum* Bl.


Chittagong.


**Dysoxylum Procerum** Hiern; F. B. I. i. 547; E. D. D. 889.

Chittagong.

158. Amoora Eoxb.

Trees; leaves imparipinnate; leaflets oblique, quite coriaceous; stipules 0. Flowers polygamous or polygamy diccog oid or -partite. Petals 3. Stamens connate in a campanulate inconspicuously 6-lobed tube; anthers 6, disk obsolete. Ovary short, sessile, 3-locular; stigma included; locules 1-2-ovuled. Fruit a subglobose, coriaceous, loculicidal 3-valved capsule. Seeds with a fleshy bright arillus; testa coriaceous; albumen 0; embryo with cotyledons.

Flowers subsessile spicate; male spikes branched, female simple, 5-partite; fruit 1-5 in. across.

Flowers pedicelled; male in many-fid, branching panicles, female few-fid, racemes; calyx 3-lobed or 3-toothed:—

Leaflets alternate or subalternate, not more than 6; ovary 2-celled, fruit ovoid 2-celled, under 1 in. across; racemes much shorter leaves. Leaflets opposite or subopposite, often as many as 12; ovary fruit subglobose 3-celled, 2-5 in. across; racemes about as long leaves.


Chota Nagpur; N. Bengal; Chittagong; also often planted in the other provinces.


306. AMOORA CHITTAGONGA Hiern; F. B. I. i. 559.

Chittagong.

A considerable tree.


Sundribuns, abundant.

A large tree with numerous vertical blind rootsuckers. Beng. Amur, latmi.

159. Heynea Roxb.

Trees or rarely shrubs; leaves imparipinnate; leaflets 5-opposite, entire; stipules 0. Flowers hermaphrodite, small, in long-peduncled terminal and axillary panicles. Calyx short, 4-5-fid,
308. 

A considerable tree. **Vernac.** Kapia kushi, chenenji.

160. Aglaia Lour.

free or shrubs; **leaves** pinnate or 3-foliolate; leaflets entire; pubescence often lepidote or stellate; stipules 0. **Flowers** pedunculate, minute or small, subglobose, in dense or lax panicles. **Calyx** 5-lobed; lobes imbricate. **Petals** 5, short, concave, imbricate, connate in an urceolate or subglobose tube, 5-toothed or obscure. **Ovary** subovoid, 1-3-locular; style very short, stigma simple or lobed, clavate or capitate; ovules 2 or 1 in each loculus. **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 \textit{Roxburghiana}.

**Leaflets** 11-13, bright green \textit{Perviridis}.


161. Walsura Roxb.

Trees; **leaves** imparipinnate, sometimes 1-foliolate; leaflets opposite, quite entire; stipules 0. **Flowers** small, hennaptopse, axillary and terminal panicles. **Calyx** short, 5-fid or 10-fid lobes imbricate. **Petals** 5, oblong, spreading, slightly imbricate. **Stamens** 8 or 10, free linear or subulate, ovoid, connate.
in a tube; anthers terminal or inserted in a notch of the filament; disk usually annular. Ovary sunk in the disk; style short, stigma turbiniform, rarely like, rarely 2-toothed. Ovary annular; ovules 2 in each loculus. Fruit indehiscent Dehiscence 2-3-celled, and 1-2-seeded. Seed enclosed in a 2-celled, and 1-2-seeded. Seed enclosed in an albumen 0; embryo with thick cotyledons.

811. WALSUBA ROBUSTA Roxb.; F. I. • *580.
E. D. W. 19.

Chittagong.

A large timber tree. Vcrnor. Uppling-

162. Carapa Aubl.

Trees, always littoral; leaves equally pinnate, sometimes 8-jugate, opposite, entire; stipules 0. Flowers hermaphrodite, in lax axillary panicles. Calyx short, reflexed, contorted. Stamens connate in a subulate, ovate, 8-toothed at the apex, the teeth 2-partite; anthers with the teeth, included; disk cupular, adnate to ovary. Ovary 4-grooved, 4-locular; style short, stigma discoid, 5-lobed; ovules 2-8 in each loculus. Fruit a very large 4-lobed capsule, the 4 coriaceous valves opening opposite dissepiments. Seeds large, thick, compressed, irregularly angular; testa hard; arillus 0; albumen 0; embryo with cotyledons.


A small tree, with a large spherical fruit. Bcns'h poohar.

163. Swietenia Linn.

Lofty trees; leaves even-pinnate; leaflets opposite, stipules 0. Flowers hermaphrodite, small, in axillary terminal panicles. Calyx small, 5-fid, lobes imbricate, spreading, contorted. Stamens connate in an urceolate tube; anthers 10, apiculate, attached between the teeth annular. Ovary sessile, ovoid, 5-locular; style short, discoid, 5-lobed; ovules in each loculus numerous, on angle. Fruit a 5-locular capsule septifragally dehiscent base, the 5 valves 2-lamellate, the outer thickly the inner
Soymida A. Juss.

Leaves even-pinnate; leaflets opposite, entire, oblong, obtuse, stipules 0. Flowers small, in axillary and terminal panicules. Calyx short, 5-toothed. 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, stigmas bony, fleshy; ovules pendulous, 2-seriate, about 12 in 2-lamellate capsule; valves flat, separating from the 5-winged axis. Seeds numerous, winged at both ends; albumen fleshy; embryo with numerous cotyledons.

Swietenia febrifuga F. I. ii. 398.


A large timber tree. Vernac. Rohun.

165. Chickrassia A. Juss.

Leaves even-pinnate; leaflets subopposite, entire, uminate, oblique; stipules 0. Flowers hermaphrodite, in axillary panicles. Calyx short, 5-toothed. Petals 5, oblong, contorted, suberect. Stamens connate in a cylindrio 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-seriate in each loculus. Fruit a 3-celled, septicidally 3-valved capsule; valves 2-lamellate, separating from the 3-winged axis. Seeds flattened, winged at the lower end; albumen 0; embryo orbicular cotyledons.


Tippera; Chittagong.

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; style filiform, stigma discoid; cells with each pendulous, 2-seriate ovules. Fruit a coriaceous 5-celled, septicidally 5-valved capsule; valves each 2-lamellate. Seeds pressed, winged below or at both ends; albumen fleshy; embryo orbicular cotyledons.

Leaves usually 7-jugately pinnate; panicles glabrous; sepals acute; capsule subglobose, valves woody; seeds evenly winged at both 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.


Fairly general, though in the central parts only a planted species.

318. CEDRELA MICROCARPA C. DC.

Chittagong; Tippera.
A tall timber tree. Vernac. Tun; kujya.
167. Chloroxylon DC.

Medium trees; leaves even-pinnate; leaflets obtuse, obovate, long-attenuate.


3-locular; style short, slender, glabrous, stigma capitate. Nucells about 8, 2-seriate in each cell. Fruit a leathery, 8-valved capsule. Seeds compressed with anguly winged above; albumen 0; embryo with thick cotyledons.

CHLOROXYLON SWIBTENIA DC; F. B. I. i. 569; E. D. 1081.

Swietenia Chloroxylon F. I. U.-40GI
Chota Nagpur.

Order XXXV. CHAILLETIACEAE.

Trees or shrubs. Leaves alternate, entire, simple; stipules 0. Flowers regular or irregular, 1-sexual or polygamous, rarely hermaphrodite, in corymbose cymes with 5 nate to petiole. Disk o! 5 glands or scales, or cupuU glands or lobes. Squamae free or connate, sometimes unequal, tricite. Flowers 5, free, subpapilous, equal or unequai, 0. 2-H blade often with an inrolled plate adnate, teeth some openinbud. Filaments free or adnate to petals, anthers convolute often thickened behind; dehiscence <"", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", "", ""
168. Chailletia DC.

Trees or shrubs; *leaves*, alternate, entire; stipules 2, deciduous. *lower*, small, polygamo-monocccious, in corymbose cymes. Sepals 5, unequal, obtuse, connate at least at the base. Petals 2-lobed, narrow, free, *DM* of 5 *quincunciate antipetalous*.<sup>1</sup> Stamens 5, sometimes slightly adnate at the base to the petals. *OV* 7: Jocular; styles 2-3, subconnate or free, <sup>2</sup> capitatae; ovules in each cell 2, pendulous from the top. &<sup>3</sup> 2-celled subdikymous drupe with a 2-celled stone, or 1-celled with *1-celled stone. Seeds solitary in each cell, pendulous; <sup>4</sup> membranous; albumen 0; embryo with thick cotyledons.

<sup>0</sup>. Chailletia gelonioides Hook, f.; F. B. I. *CHAILLETTIA GELONIOIDES* Hook, f.; F. B. I. *MOACURRA GELONIOIDES* F. I. ii. 70.

Chittagong.


Order XXXXY. OLACINEJE.

Trees or shrubs, rarely herbs, sometimes climbing. *W* alternate, rarely opposite, simple or lobed, penni- or pinnatifid, *stipules* 0. Flowers regular, hermaphrodite, or 1-sexual often dioecious, cymose. Disk hypogynous, or cupular perigynous or epigynous. Sepals 4-5, usually small, connate in a toothed calyx or free, sometimes accrescent, sometimes adnate to ovaries 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 or alternate with them, all fertile or some without anthers, or connate; anthers erect, 2-celled; dehiscence longitudinal introrse. Carpels united in a free or half-superior 1 Jocular or imperfect 2-celled ovary, or carpels 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 loculus<sup>6</sup> 'umelce 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-exunl; ovules 1 to each cell :-[p. 323]

Ovary somewhat 3-celled below, Lulled above; ovules 3, pendulous I
Olacinae, 31-i

fertile stamens opposite edges of petals, staminodes 5-6 opposite

centres; flowers 2-chlamydeous............................ Olax.

Ovary with cells throughout; ovule solitary; fertile stamens isomerous
and opposite to petals or perianth-lobes:

flowers 2-chlamydeous; fertile stamens 5 opposite the petals,

staminodes pendulous; fertile stamens opposite perianth-lobes:

Staminodes 0; ovule pendulous; bracts conspicuous

Lepionurus.

Fertile stamens alternate with the petals; styles short:

flowers capitate; stigma dilated, cupular.................... Miquelina.

*Fern

169. Olax Linn.

Trees or shrubs, usually scandent, with woody twigs; flowers in racemes:

all branches terete; racemes many-flowered:

Prickly; bracts minute, shorter than peduncles............ scantier.

Unarmed; bracts large, imbricate, enveloping flowers...hnbricata.
BENGAL PLANTS.

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{Branches angular, unarmed; racemes few-flowered [p. 323]. Undeishrubs, with short erect stocks and herbaceous branches, solitary [p. 323].}


Behar; Chota Nagpur; Chittagong. A large climber, almost tree-like. Hind. Hexiia

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. I. i. 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. A small shrub with woody base and herbaceous si

170. Opilia Roxb.

Low trees or climbing shrubs; leaves alternate, distic, simple, entire, 1-nerved; stipules 0. Calyx minute annular, obscurely 5-toothed. Petals 5. 5 fertile, free, opposite the petals and alternate with 5 thick fl

5 disk-glands or staminodes. Ovary free, sessile, 1-locular; ovule solitary, pendulous. Fruit an

indehiscent drupe; pericarp thin, fleshy; stone crustaceous; 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 L1.

Small trees; leaves alternate, shortly petioled, simple, 1-nerved; stipules 0. Flowers Inonochlaiiiydeous, 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 glands at the base of perianth-tube. Ovary free, 5 stigma sessile, 4-lobed; ovule solitary, pendulous; testa thin; albumen fleshy; embryo with leafy cotyledons.

Chittagong.

A small tree.

172. Cansjera A. Juss.

Petioled $^g$ occasionally armed; leaves alternate, shortly petiolate; stipules 0. Flowers monochlamydeous, hermaphroditic, dense bracted axillary spikes. Perianth regular, occasional marcescent; lobes valvate. Stamens usually 4 fertile, opposite perianth-lobes and alternate with 4-5 hypogynous, opposite nodes or disk-glands; filaments free or adnate at the style; ovary superior, ovoid-oonical, 1-locular; fruit a drupe surrounded by the marcescent perianth; simple, 3-5-nartite; lobes valvate. Anthers $^g$ stamens or staminodes 0. Ovary subsessile, 1-locular; ovules 2, collateral, pendulous; testa thin; albumen fleshy; embryo with leafy cotyledons.

Behar, Monghyr Hills.

A climbing shrub.

173. Iodes Bl.

Petioled $^g$ Usilia, simple i-nerved; stipules 0. Mowers dioecious, di-ecious, in axillary or extra-axillary cymes, the lower peduncles simple and metamorphosed into tendrils. J Calyx minute, 5-toothed. Petals connate, 3-5-partite; lobes valvate. Ovary superior, ovoid-oonical, 1-locular; ovules 2, collateral, pendulous; testa thin; albumen fleshy; embryo with leafy cotyledons.

OLACINEAE. 325
174. Miquelia Meissn.

Shrubs, climbing; wood with large vessels; leaves altern^ petiolate, palminerved, simple, membranous; stipules 0. F^lores\ dioecious, subcapitate; peduncles extra-axillary. 3 Peduncle^ racemose. Calyx minute, 4-5-fid. Petals connate below * a long pedicel-like occluded tube, limb 4-5-lobed; lobes valvate, *P* mflexed. Stamens 4-5, alternate with corolla-lobes; filamien short; anthers introrse. Ovary 0. ? Peduncles solitary. ^ Peduncle 8 minute, 4-5-fid. Petals 4-5, free or only faintly connate below, » length reflexed. Staminodes 4-5, alternate with corolla-lobes on 0. Ovary sessile, 1-locular; style short, stigma dilated, cup^ulata; ovules 2, pendulous from the apex of the loculus. Fruit an oblong somewhat compressed drupe, its base surrounded by the persisten unaltered calyx; stone crustaceous, rugose, 1-seeded. Seed V\ dulous; albumen fleshy; embryo with thick leafy cotyledons.

329. MIQUELIA GIBBA Baill.; F. 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. Petals* 5, free or connate at the base. Stamens 5, fertile, alternate with the petals and also with 5 antipetalous staminodes external to the anthenferous filaments; anthers erect, apiculate, 2-celled. O#*9 rudimentary. *Stamnodes 4-6, hypogynous, alternate with as many oompweaed glands. Ovary Uocular, sessile, villous; styl\^ short, 2-3-fid above with capitate stigmas; ovules % collateral, pendulous. *rmt an obliquely ovoid compressed drupe; stone crustaceous, 1-celled. Seed solitary; albumen fleshy; embryo with leafy cotyledons.

330. NATSUTUM HEKP\E\CID\M\ Ham... p B l j 5 9 5

N. Bengal; E. Bengal; Chittagong.

A ohmbing shrub.
Order XXXXYII. ILICINEJE.

Leaves alternate, simple, usually coriaceous and evergreen, or toes; leaves alternate, usually coriaceous and evergreen sometimes deciduous; stipules minute or 0. Flowers small, regular, small, moderate or minute, or 0. Flowers regular, small, Jious, s with imperfect ovary, ? with ini-
tially cymes fascicles or small umbels. Flowers regular, small, hermaphrodite or polygamous, small, usually cymose. Disk generally conspicuous, flat or tumid, lobed

Order XXXXYIII. CELASTRINEJE.

Trees or erect or climbing shrubs, branches sometimes spinous. Leaves alternate, simple, usually coriaceous and evergreen, or toes; leaves alternate, usually coriaceous and evergreen sometimes deciduous; stipules minute or 0. Flowers small, regular, small, moderate or minute, or 0. Flowers regular, small, hermaphrodite or polygamous, small, usually cymose. Disk generally conspicuous, flat or tumid, lobed
or entire, rarely 0. Sepals united in a small persistent calyx with imbricate segments. Petals 4-5, rarely of below the disk or on its margin, imbricate. Stamens 0-2; filaments free, subulate or flattened, usually short; 2-locular, or sometimes subcontiguous at apex; dehiscence lateral. Carpels united as a sessile, 3-5-locular free or confluent with disk at the base; style short or 0, y-gonous, rarely 3-partite; ovules 2 in each cell, and erect and basal, or several ascending from the inner ang raphe ventral, rarely 1 or 2 and pendulous with raphe Fruit capsular, berry-like, drupaceous or samaroid. Seed us arillate, sometimes winged; albumen fleshy or 0; embryo large with leafy cotyledons.

Stamens 4-5, rarely more, attached to margin or below main filaments usually incurved; seed albuminous:

Leaves opposite:
- Fruit indeliscent; seeds without arillus.
- Fruit dehiscent; seeds arillate.

Leaves alternate; fruits dehiscent:
- Climbers; flowers in terminal panicles; fruits subglobose:

Erect shrubs or trees:
- Shrubs with armed branches; flowers oymose; fruits globose:
- Unarmed trees; flowers spicate; fruits narrowly oblong

Stamens usually 3, attached to face of disk, always recurved, without albumen; leaves opposite:
- Fruit indeliiscent, globose; seeds not winged
- Fruit dehiscent, flattened; seeds winged

177. Elaeodendron J:icq.

Trees or shrubs; leaves opposite or subopposite, crenate; stipules minute, scale-like. Flowers polygamous or hermaphrodite, in axillary dichotomous cymes. Calyx 5-lobed inserted rare. Petals 5, spreading; disk large. Stamens 5; anthers subglobe ovary adnate to disk, conical, 2-, 4-, or 5-locular; style short ovules 2 in each locuhu; Fruit indeliscent, dry or succulose 1-2-celled; cells 1-, rarely 2-seeded. Seed with membranous testa and no aril; albumen fleshy; embryo with flat cotyledons.

_Shrubs or small trees with often spinescent branches; leaves alternate, entire or crenulate; stipules deciduous, or 0. Flowers polygamous, in terminal or axillary cymes or panicles. Calyx 5-cleft. Petals 5, spreading; ovary 3-4-locular; style short entire with stigma 3-lobed, and with recurved segments and subcapitate stigmas; ovules 2. Fruit a trilocular capsule. Seed with a large fleshy arillus; albumen fleshy; embryo with leafy cotyledons._

179. *Celastrus* Linn.

_Shrubs or small trees with often spinescent branches; leaves alternate, entire or crenulate; stipules deciduous, or 0. Flowers polygamous, in terminal or axillary cymes or panicles. Calyx 5-cleft. Petals 5, spreading; ovary 3-4-locular; style short entire with stigma 3-lobed, and with recurved segments and subcapitate stigmas; ovules 2. Fruit a trilocular capsule. Seed with a large fleshy arillus; albumen fleshy; embryo with leafy cotyledons._
or sinuate. **Stamens** 4-5, attached below the disk. Based, on or partially sunk in the disk, 2-3-locular; **stigma** 2-3-lobed; ovules 2 in each loculus. **Fruit** a subglobose capsule, 2-3-celled; cells 1-2-seeded. **Seeds** without arillula; albumen fleshy; embryo with leafy coty.

Branches stoutish, zigzag; leaves entire, obovate-cuneate; flowers on spines and in leaf-axils; fruit turbinate, -25 in. long. 

Branches rather slender, almost straight; leaves crenulate, suborbicular; cymes on spines or in-leaf axils, many times divided; 15 in. long.

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335. **GYMNOSPORIA EMARGINATA** Both.; F. B. I. i. 621; C. 852. *Celastrus emarginata* F. T. i. 620.

Orissa, Khurda.

* A shrub.


Chota Nagpur, Parasnath.

A shrub.

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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. **Calyx** 5-parted, recurved. **Petals** 5, inserted below margin of disk, recurved; 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, erect 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.

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182. **Salacia** Linn.

Small trees, or climbing or sermentose shrubs; *leaves* opposite, petiolate; stipules 0. **Calyx** 5-partite, small. **Petals** 5.
Stamens usually 8, on the top of the disk close to the ovary; stamens recurved. Ovary conical, sunk in the disk, 3-locular; styles 7 short, stigma capitate or 3-lobed; ovules 2-seriate, 2-8 cell. Fruit indehiscent, berry-like, fleshy or firmly leathery. Seed 1-4 in each cell, angular; testa firm; albumen ubryo with large usually corrugated cotyledons.

Wers few, 3-6 from each tubercle, almost all axillary, pedicels under 1 m long:—

1. Leaves obtusely acuminate, distinctly serrate; branches smooth; fruit piinoide*.
2. Leaves caudate-acuminate, entire; branches with wrinkled bark; nut 2-3-celled, ^-seeded, 1-75-2 in. across; sepals glabrous

A large climber with very foetid flowers.

Beng. Modhu-phal.

SALACIA PRINOIDES DC.; F. B. I. i. 626. Johnia coromandiana F. I. i. 169.

A large branching shrub.

Chittagong.

183. Hippocratea Lin.

Smaller trees or climbing shrubs; leaves opposite, petioled; Petioles small, caducous. Flowers small, in axillary terminal panicles. Calyx small, 5-parted; petals spreading, imbricate or valvate; disk conical or recurved, alternate with lobes of ovary. Ovary surronded by the disk. 8-locular; styles very short or 0, filaments 1-8; aroles 2-seriate. 2-10 in each cell, usually dehiscent. Fruit of 3 flattened carpels connate below, a large flat connate to each cell. Seeds compressed, generally winged.
BENGAL PLANTS.

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Flowers minute, 05 in. across; leaves finely serrate.

rger, A in. across; leaves shallow-crenate.

HIPPOCRATEA INDICA WilM.; F. T. i. 165 j F. B. I- Behar.

341. HIPPOOEATEA MACRANTHA Korth. Chittagong.
A shrub with sariflentose branches.

Order XXXIX. RHAMNAGBJG.

B8, or erect or climbing, rarely cirrhose, shrubs, often sp.

leaves simple, alternate or opposite, usually leathery, some

retliminerved; stipules small deciduous, or if persistent spin

V-flowers regular, hermaphrodite or polygamus, small, in

jense solitary or panicled cymes. Disk fleshy and filling

cal, V-shaped, or membranous and lining the calyx, entire or 1

glabrous or tomentose. Sejms connate as a 4-5 nd calyx *

pmingular erect or recurved valvate lobes usually ridged interna

petals 4-5, rarely 0, inserted on the throat of the calyx-*

ineralljr shoi-ter than calyx-lobes, usually clawed and hooded

l'mcnr ±5, inserted with and opposite the petals, 'o^n

de, sometimes subeonfluent; dehiscence longitudinal*1

or 4`11 p.

more

stigma.

-cell.

GwpeU united as a sessile 3-, raref

ed in the diak and superior, or

as tendi

-ect, an all f o * ^ * * J rarely 2 in^cb

raphe dorsal rarely lateral. JP^r

the ba, or to

inferior, ad
date calyx-tube, or wholly

in each cell Solitary'J**U,' 1-4-celled, sometimes winged. Seed

scanty, someth
t

y arillate; albumen fleshy but often

bryo large.

*Avmed shrubs or tr^s

iisk; fruit half-euperoi 3, 3-nerved leaves; ovary sunk in

core; seeds albuminous [ p. ^7, with ft hard ^^led, I-S-se^
Typhus.)

**RHAMNACEAE:**

climbers with penninerved leaves:—[p-3^32]

apevior, samaroid, 1-celled, 1-seeded below, prolonged-above
coriaceous wing; seeds without allumen

inferior, crowned with persistent calyx, 3-celled, 3-seeded; seeds
sometimes; tendrils usually present:

P* terete; flowers subumbeliate; branches cirrhose.... Hehn.*


Trees * shrubs, often decumbent, sarmentose or
armed; ! weeles, sutWious, alternate, UBually coriaceous, patoi
nered; stipule: transformed into sharp 5
M in fascicles or in sessile or pedunoled

Calyx
5-nd; lobes spreading, keeled within. P«<«^5>
Jtixed, rarely 0, digk 5-10 lobed. Sterna 5,
iten nestling under the petals. Ovary sunk in, or
ba^ to, the di^2-4-loclr; styles 3-». rarely 4 usually mo.

Frmt - ur ******* fleshy o? dry, with a woody or bony 1 ^ J J ^
ed Putamen. Seeds somewhat comprised; albumei
scanty 'r 0; embryo with thick cotyledons-

Flowers

in sessile axillary cymes:-

Leaves glabrous .................
Leaves more or less pubescent:
Leaves glabrous above, woollj
Leaves softly pubescent above,
silk* bennath.

Cymes

axillary....................
Cymes in terminal panicles:
Leaves tomentose beneath
Leaves glabrescent beneath

343* ZIZYPHUS VULGARUB E. D. 2. 280.
Cultivated.

ZIZYPHUS JUJUBA 19mk ; T. i, i, 608; 1.
E. Id. Z. 231.
Cultivated, general
A small tree. \( \text{Hind. and Beng. Ber, } Safflfc^, \) Join ianum; \( \text{Uriya Bar koli.} \) ^t i. 63*

\text{ZIZYPHUS XYLOPYRA} Willd.; P. I. i. 611; F. B. * E. D. z. 290.

Behar; Chota Nagpur.\n
A small, usually gregarious tree. \( \text{Hind. Kuk-ber; Santal.} \) and Kol. Kar katta; \( \text{Uriya Kanta bohul.} \)

\text{ZIZYPHUS RDGOSA} Lamk; F. B. i. 636; B. D. z. 273.

Chittagong.\n
A large shrub.

\text{Var. GLABRKSCENS} Train.

\text{Chota Nagpur; Behar; W. Bengal.}

A large evergreen shrub, often climbing. \( \text{'Kol. Tsekra; Hind. Kukh-ber.} \)

185. \text{Yentilago} Giiertn.

\(-,\) climbing; \text{leave* alternate, bifarious; stipule* Tnall, caducous. Flowers small, in axillary and terminal pa* small bracteoles. Calyx 5-fid; lobes spreading, keellefl \\
^\wedge \text{be obconic. Petal, 5, deltoid or subcucullate ; disk 5-lobed} \text{Stamen, 5, opposite petals and adnate} \text{produced.} \)

\( \text{Fruit a subglobose, f-ceUed,"} 1 \text{ W e d } " \text{in* ve ma linear oblong} \text{coriaceous wing, girt below by} \)

\text{Seed su} \text{b o y e ; albumen^; embryo with thick fleshy cotyledons.} \)

\text{Branches and leaves glabrous or near girt by the calyx at the base.} \\
\text{Branches and leaves pubescent; panicles \text{ger,} the middle} \\
\text{maderaspatana} \text{calyculata.} \\
\text{V. 54.} \)
tHAMAMANCT

Onis sa; Chota Nagpur; W. Bengal. Strong climber. Beng. and UWya Ruktu-pita; Hind.

CALYCULATA King. V. maderaspatana F. I. L 629.
verticulata P. B. I. i. 631; E. D. V. 48.

186. Gouania Linn.

UllumieA climbing by means of tendrils; leaves alter-
ate; gl

or terminal I & deciduous. Flowers polygamous, in axillary
pikes, the rachis often cirrhose. Calyx superior,
1

obconic. Petals 5, inserted below the margin of

Stamens
ft-l" ^, an^ neurning under the petals. Ovary sunk in the
style 3-cleft, stigmas minute; ovules
J"riaceous, inferior, tipped by the persistent ca-
th, an t^e^d, the cells separating from the;

Ovary inferior, 8-loeul^, the cells separating from the;

Seed, il cotyledon.

18-. Helinus

II. J.

2r=S=StS3:7S=2

* mi the calyx-tube, cucullate. ^ Ihort,
B as the petals, inferior, 8-loeul^, obovoid.
't. stigmas recurved; ovules solitary. * ruit
Bjobose, 3-celled with cells 1-seeded, coriaceous, ad b
somewhat compressed; testa leatery, f minute radicle.

Western Behar; Chota Nagpur.

A scandent cirrhose shrub.
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 pedatelyn 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 panicked umbelIed or spicate cymes. Vii* is united with petals stamens or ovary, annular or * exptIu bed Sepals con nate in a small, entire or valvately 4-5-toothed or -lo calyx. Petals 4-5, free or connate, valvate, caducous. *S u it* 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. mhc ventral. Fruit indehiscent, berry- Ks 1-2-seeded. bee,V^-rect, often III gu lose ; embryo short, basal*.

188. Yitis LL bilig usually by
- Ivy by adventitious roots; ileii s.m c> or 3-9-foliati 10Ch us and then digitate or pedate, rarely lunate or 2-pinnate; stop adnate to base of petiole, membranous, or 0. Flowers hermaphrodite or occasionally polygamous, usuallu ebracteate, in cymes disposed in racemes, spikes, panicles, or umbels. short, entire or 4-5-toothed or -lobed. Petals 4-5, cohering at W apex or free; disk conspicuous or small or 0. Stamens 4r&* serted below the margin of the disk; anthers free. OvaIj 2- 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 cartilagi in embryo minute basal.
AMTELIJ>MM.

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 site smooth; pubescence only on lower surface of leaflets 1

Leaflets 5; seeds solitary, obliquely ovate

Leaves glabrous:—

Style distinct; cymes very short; leaflets

Style 0:—

Leaflets 1-3:—

Cymes very short, glabrous.

LeafletB 5, or upper only 8; cyme Bhort, put

Leaflets 7, usually softly pubescent; cymes equalling petiole.
BENGAL PLANTS.

Chota Nagpur; Behar; W. Bengal; C. Bengal. A large herbaceous climber. Beng. "Ila; Santal. Ic'er.

352. VITIS BARBATA Wall.; F. B. I. i. 651; E. i> v* 194.
   E. Bengal, Dacca; Chittagong.
   A large climber.

353. VITIS TOMENTOSA Heyne; F. B. I. i. 650; E. v*.
   Chota Nagpur; Behar.

354. VITIS QUADRANGULARIS Wall.; F. B. I. i. 641.<
   quadrangularis F. I. i. 407.
   Sundriubs; 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.

357. VITIS ADNATA Wall.; F. B. I. i. 647; E. D. V. 195.*-
   mlna F. I. i. 405.
   N. Bengal; C. Bengal; E. Bengal; Chittagong.

   (shota Nagpur; liehar; W. Bengal.
   A large climber.

359. VITIS TRIFOLIA Linn. V. carsona F. B. I. i- G54.
   C. Bengal; E. Bengal; Hundriubs.
   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 AURICULATAHoxb.; E. D. V. 191. Cissus auric*.
   F. T. i. 412.
   Chota Nagpur, Singhbhum.
   A large climber.

362. VITIS OXYPHYLLA Wall,
AMPAADEM.

Chittagong.

An extensive climber.

VITIS ANGUSTRIFOLIA Wall.; F. B. I. i. 654. CUBUB <wsh<jvsh-folia F. I. i. 408.

N. Bengal.

364 A rather slender climber.

VITIS BRACETEOLA Wall.; F. 11. I. i. 654.

N. Bengal, Rungpur; Chittagong.

An extensive climber.


Chota Nagpur, Parasnath; E. Bengal, Dacca; Chittagong.

A large climber.

VITIS PEDATA vahl; F. B. I. i. 661; E. D. V. 217.

CIBHUS pedata F. I. i. 413.

Hiota Nagpur; W. C. and N. Bengal.


189. Leea Linn.

Small trees, erect shrubs, or herbs; branches striate or furrowed; 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. **cylindric. ^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 shen t. stigma 8^woollon. Qvules solitary in each loculus. Fritt B-6-cell-l, 3-6-seeded, berry-like, usually succulent, subglobose, the top depressed. Srei cuneate with a hard testa; albumen caiti-

laginous J embryo minute, basal.

F: J*em red; leaves compound, primary nerves distant:- alata.

T: V M all 2-3.pinnate

Leaves compound: [p. 340]

leaves with close, numerous primary nerves: [p. 340]

leaves all simply pinnate; teaflata ^, 0 ^, ^1th parallel

9^n^s; petioles and rachises often winged fp. <W>
BENGAL PLANTS.

1. Leaves more or less 2-pinnate; petioles and rachises reduced.

Upper leaves simply pinnate or with the lowest pair of leaflets only 3-foliolate, lower leaves 2-pinnate; leaflets corallate.

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.

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367. LEÉA ALATA Edgew.; F. B. I. i. 665.

W. Bengal, very rare; E. Bengal, Madhupur jung.

A shrub, 2-5 feet high.

368. LÉSA RUBKA Bl.

E. Bengal, Dacca and Mymensingh.

A dwarf shrub, 1-2 feet high.

369. LEÉA CRISPÀ Linn.; F. I. i. 654; E. D. L. 226.

E. Bengal; Tippera; Chittagong.

A rigid shrub, 4-8 feet high. Beng. Ban-chálítá.

370. LEÉA ASPÉRA Edgew.; F. B. I. i. 665; E. D. L. 224.

Chota Nagpur.

A stout spreading shrub, 6-12 feet high.

371. LEÉA HRRBACBA Ham. L. críspa F. B. I. i. 665.

W. Bengal; Chota Nagpur.

A many-stemmed shrub, 12-16 feet high.


E. Bengal; Chittagong.

A rigid shrub, 4-10 feet high. Bong. Kukur-jhiwa.

373. LEÉA QUATA Linn. L. Úrta 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.


Chota Nagpur; O. Bengal; E. Bengal; ChHtagong.

A shrub, 6-12 feet high. Haramada.
Order XLI. SAPINDACEAE.

375. L. MACROPHYLLA Hornem.; F. I. 653; F. B. I. i. 664
partly; E. D. L. 232.
Chota Nagpur; Behar; Bengal gene
A herb, 1-3 feet high ; the lower leaf often 5-1 foot.
the upper ones 5-1 foot. Hind. w&Beng. Dhol-samudra,
Smtal. Hatkan.

Order XLI. SAPINDACEAE.

Two or shrubs, rarely undewhrs or herbs, sometimes. diminishing, occasionally with tendrils. Leaves alternate or toss opposite, pinnate with leaflets alternate or oppositely. 8-fol
Palmate, or simple, entire or serrate, sometimes.

Flowers regular or irregular, usual. 
**Dish** annular or oblique, occasionally. 
**Petals** usually 4-5, free or connate, of

Stamen, 5-10; filaments often pubescent, al*js **

ed between ovary and disk, on the disk, or at base of

f^naUy, occasionally I decline; others 2-celled ba 

gho<< t or below only in a median or «- J j f b A £Z*

locular ovary; style simple or divided, « s u f g f s pending,

11S(1) % simple; "ovulls 1-2, rarely more, in each: o^-

cched to inner angle, anatropous amphitropous.

rarely horizontal, the raphe usuai.

or indehiscent and berry-like or dry, some t B

i i

f Present; embryo usually thick, occ^onaH spual

plicate.

*Leaves alternate, stipules 0; seeds with straight walls.
§Cocci of fruit deeply divided to nearly their base but spontaneously separating:—[p 341]

Cocci oblong; testa of seed membranous; scales of the petal noded and crested. ............................... Erioglossus

Cocci ellipsoid or sub-3-gonous; testa cartilaginous; petals not crested. .......................... Aphanogama

{Seeds arillate:—[p. 341]

Fruit not deeply lobed, usually more than 1 cell developed.

Schleienen. .......................... Nephelium.

Fruit sulcately lobed, usually only 1 coccus developed

Ovules 2 in each cell of the ovary:—[p. 341]

Leaves pinnate; capsule coriaceous inflated, subcompressor, not winged; stems inserted inside the disk; seeds arillate

Harpullia.

Leaves simple; capsule membranous not inflated, much compressed, oblong, winged; stamens inserted outside the disk; seeds without arilla; stamens inserted outside the disk; ovules 2 in each cell of ovary.

190. Cardiospermum Linn.

Herb .......................... Cardiospermum

Stems and branches clipeate by tendrils

Irregular, polygamo-dioecious; axillary racemes, the lowest of axillary racemes, the lowest of f of pedicels of stipules transformed into tendrils. S^afo 4, concave the lateral larger pair with a concave suprav opposite the 4,«« t^glands shorter than, the

Stamen, 8, excentric; filaments

OvZv^««t^ the 4...«« t^glands shorter than, the

Santal. Haramada.

374. L^AROBusTARoxb.; P.B.I. i 667; B. D. L. J

ChotaNagpur; C.Bengal; E.Bengal; Chittu.

A shrub, 6-12 feet high. .......................... Santal. Haramada.

C-and E. Bengal, chitta.

A shrub, 4-10 feet high. .......................... Beng. Kukur-jh. 

373. LEEA AXQUATA Linn. L. hirta F. I. i. 555; F. B. I.

E. D. L. 229.

Bengal; Chittagong.

A ngxd Bhrub) 4-10 f
SCHLIECHERA Willd.; F. I. ii. 277; P. B. I. i. 681; E. D. S. 950.

Chota Nagpur.

Fruit dry, indehiscent, coriaceous. Seeds erect, arillate; with conduplicate, unequal, connate cotyledons.

196. Nephelium Linn.

Trees or shrubs; leaves alternate, usually even-pinnate; leaflets with lowest pair of leaflets dentate; stipules 0, or very rarely stipuliform. Flowers regular, polygamous, in terminal and axillary panicles. Calyx 4-8-lobed, usually valvate or subvalvate. Petals small, without scales, or 0; abrous or pubescent. Stamens 6, 8, or 10, inserted
within the disk. Ovary pubescent, sub\^\text{u}cose\text{e} j\text{e} each loculus; style erect, stigma 2-3-lobed; ov\text{e}l\text{e}l\text{e}globose, echinate or tubercled, rarely smooth. Fruit indehiscent, 1-3-, but usually 1\text{g}lobose, echinate or tubercled, rarely smooth. Petals 0; calyx dentate; disk glabrous. Petals present; calyx deeply lobed; disk tomentose.

384. \text{N}BPHELUM \text{L}ITCHI Camb.; F. B. I. i. 687; E-

\text{Scytalia} Litchi F. I. ii. 269.

Planted generally.


385. \text{N}BPHELUM \text{L}ONGANA Camb.; F. B. I. i. 688; **

\text{Scytalia} Longan F. I. ii. 270.

Planted occasionally.


197. Harpullia Roxb.

Trees; leaves alternate, even-pinnate; leaflets alternate. Flowers regular, polygamous or polygamo-dioecious, or subterminal racemes or panicles. Sepals 4-5, imbricate. Petals 4-5, narrowly obovate, without scales; disk obscure. Stamens 5-8, elongated, inserted on the disk. Ovary tomentose, ellipsoid or oblong, 2-locular, elongated, stigma linear, twisted; ovules usually 2 superior to each loculus. Fruit a coriaceous, inflated, 2-lobed, 2-celled licidally 2-valved capsule. Seed 1-2 in each cell, usually arillate; albumen 0; embryo with thick fleshy cotyledons.

386. \text{H}ARPULLIA \text{C}UPANIOIDES Roxb.; F. I. i. 645; F. B. I. 1- Chittagong.

A straight-stemmed tree. \text{V}ernaë. Harpulli.

198. \text{D}odonaea Linn.

Shrubs; leaves simple, alternate; stipules 0. Flowers minute, polygamous or polygamo-dioecious, in lateral and terminal cymes. Sepals 2-5, imbricate or valvate. Petals 0; disk obsolete in \text{<$>}; small in \text{$>}$ flowers. Stamens 5-10, but usually 8, inserted on the outer side of the disk. Ovary 3-6-angled and 3-6-locular; style
347. Sabiageje.

Capsule 2-6-sided, membranous or 1-2 in each loculus - ally 2-6-valved, valves dorsally winged. Seeds 
5 embryo spiral.

- Aodoncea viscosa Linn.; F. B. I. i. 697; E. D. D. 725.

Tirhut; Chota Nagpur; N. Bengal; Chittagong.


199. Turpinia Vent.

Pinnate leaves smooth branches; leaves opposite, odd-

American "lap with 2-3, sessile 3-lobed and 3-locular; style long, 

imbricate. Stamens 5, inserted 

angry sessile, 3-lobed and 3-locular; style long, 

ovules in each loculus 2 collateral, or 

388. Turpinia vomifera DC; F. B. I. i. 698; E. D. T. 847.

387. Umbellula pomifera F. I. i. 633.

Chittagon. 


Order XLII. Sabiaceae.

Shrubs, simple or compound, or erect trees. Leaves alternate, 

irregular, hermaphrodite or polygnous, usually pinnate. 

Disk usually annular. Sepals imbricate, connate in a 4-5-

partite calyx.

with sepals imbricate. Stamens 4-5, opposite the petals, inserted 

at the base of the small disk. all 

anthers filaments clavate or obcuneate, the sterile subulate; 

Valve cells 2, discrete; dehiscence transverse, or 

Carpels more or less connate below 

3-lobed 2-3-locular ovary; styles 2-3 free or 

stigmas minute; ovules in each loculus 1-2, super-


347. Sabiageje.

Capsule 2-6-sided, membranous or 1-2 in each loculus - ally 2-6-valved, valves dorsally winged. Seeds 
5 embryo spiral.

- Aodoncea viscosa Linn.; F. B. I. i. 697; E. D. D. 725.

Tirhut; Chota Nagpur; N. Bengal; Chittagong.


199. Turpinia Vent.

Pinnate leaves smooth branches; leaves opposite, odd-

American "lap with 2-3, sessile 3-lobed and 3-locular; style long, 

imbricate. Stamens 5, inserted 

angry sessile, 3-lobed and 3-locular; style long, 

ovules in each loculus 2 collateral, or 

388. Turpinia vomifera DC; F. B. I. i. 698; E. D. T. 847.

387. Umbellula pomifera F. I. i. 633.

Chittagon. 


Order XLII. Sabiaceae.

Shrubs, simple or compound, or erect trees. Leaves alternate, 

irregular, hermaphrodite or polygnous, usually pinnate. 

Disk usually annular. Sepals imbricate, connate in a 4-5-

partite calyx.

with sepals imbricate. Stamens 4-5, opposite the petals, inserted 

at the base of the small disk. all 

anthers filaments clavate or obcuneate, the sterile subulate; 

Valve cells 2, discrete; dehiscence transverse, or 

Carpels more or less connate below 

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 rip with a hard 1-seeded endocarp. Seeds compressed or g basal with a broad hilum; albumen 0 or thin and adherent 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-seats persisting at their bases; leaves simple, entire, alternate; Flowers usually hermaphrodite, 2-bracteolate, axillary and solitary or in axillary simple or panicked cymes; the members of whorls opposite. Calyx 4-5-partite. Petals 4-5; disk annular or 4-5-lobed. Stamens 4-6, inserted at base of disk. Carpels rarely 3, very slightly connate; styles 2, erect, terminal. ovules.2 in each carpel, collateral or superposed, horizontal. 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 biparipinnate, with subopposite leaflets, rarely paripinnate, stipules 0. Flowers small, irregular, hermaphrodite, in branched or axillary panicles; bracts caducous. Sepals and bracteoles persistent, 5-9, in an indistinguishable uninterrupted 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 cup-shaped, 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-
AXAC AstolACE/E.

Leaves simple, 2-focular, contracted into a simple ovule 2 in each. Fruit usually subglobose drupe; stone crustaceous, 1-celled, projection over which is curved.

Leaves simple, ovate, simPUCifolia.

390 - MBIOSMA SIMPUCIFOLIA B1.; P. B. I. ii. 5. MUUngtonia

Chittagong; N. Bengal.

391 ivr AtaU tree Vernac. Dant-rangi.

MEUOSJU PINKATA Planch.; P. B. I. ii. 6. Millingtoma

Winata P. I. i. 104.

Chittagong.

A tree. Vernac, Bativa.

Order XLIII. ANACARDIACE/E.

Trees or shrubs, often with resinous or balminious juice. Leaves alternate or very rarely opposite, simple or compound and lowest leaflet sometimes stipule-like. Floioers usually regular, Polygamous or 1-sexual, always small. Xhrt cupular or annydale, or flat, entire or lobed, rarely 0. &W" connate or "Partite calyx with imbricate segments, sometimes accrescent, mnel y spathaceous.

Alternate, with "I<1", imbricate or valvate, sonietunes usually scattered or inserted below base of, rarely on, the disk; anthes 2-celled, or fixe<1 or versatile; dehiscence longitudinal, introrse. Carpels usually 2, connate but one early suppressed, less often Winn a-8 or "Ioukr ovary, rarely 5-6 free, superior or rarely suberv, generally rudimentary, solitary or connate M » "o<5 N", or Var in " lowers; styles 1-4 or stignw ^&"f&c > S in each loculus or carpel, pendulous from top or wall of a 1-celled, 1-seeded drupe, or a 2-5-celled and 2-5-seeded drupe, dehiscent. Seed erect, horizontal or pen-
350  

BENGAL PLANTS.

llous; albumen 0 or very scanty; embryo large, cotyledons.

Leaves simple:—

Parts of the flower not altered in fruit:—

Carpels 5, rarely 4 or 6, but only 1 fertile; stamens 8-10

Buchanania. 

Carpels solitary; stamens (in all our species) 1 only

Mangifera. 

Parts of the flower altered in fruit:—

Petals accrescent; calyx and peduncle unaltered; carp

Swintonia. 

Petals not accrescent:—

Ovary inferior, composed of 3 united carpels but 1-celled; drupe more or less sunk in the fleshy calyx; stamens 5; petals imbricate; calyx 5-lobed; style 1.............rimyarpus. 

Petals valvate; calyx shortly 5-toothed; styles 3 ..........petrarna. 

Stamens 5; styles 3; ovule pendulous from a near apex funicle; ovary 1-celled, but composed of 3 united carpels;— 

Buchanania. 

Stamens 8-10; style 1; ovule with a basilar funicle. 

Leaves pinnately compound:—

Drupe 1-celled, 1-seeded:—

Trees; styles 3:—

Ovule pendulous from near apex of ovary; drupe crowned by distant styles; leafless at time of flowering............Odi. 

Ovule with a basilar funicle..........................................................Tap.* 

Climber; style 1.................................................................in oly 

Drupe 2-5-celled, 2-5 -seeded; ovules pendulous; leaflets (species) with a distinct marginal nerve...............................


Trees; leaves alternate, petioled, simple, entire; stipules small, hermaphrodite, in crowded terminal and axillary panicles. Calyx short, 3-5-toothed or -lobed, persistent, imbricate. Petals 4-5, oblong, recurved, imbricate; disk orbicular. Stamens 8 or 10, free, inserted at the base of the ovary. Carpels 5-6, free, situated in the cavity of the disk, one fertilized; others imperfect; style stout, stigma truncate; ovule pendulous from a basal funicle. Fruit a small, slightly fleshy
ANACARDIACEM. **

The drupe is crustaceous or bony, 2-valved. Seed gibbous, acute at one end; albumen 0; embryo with thick cotyledons.

Panicles pubescent, stout, stiff; flowers sessile; leaves broad, tomentose or both surfaces pubescent. *latifolia.*

Panicles quite glabrous; flowers with slender pedicels; leaves narrow, glabrous. *lancifolia.*

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Oriasa; Ghota Nagpur.
A tree. *Hind,* and *Beng.* Piy&r, piyal; *Kol* Tarum.

Chittagong.
A tree.

203. Mangifera Linn.

Trees; leaves alternate, petioled, coriaceous, quite entire; stipules deciduous. *Petals* 4-5, free or adnate to the disk, imbricate; disk oollen or narrow. *Stamens* 1, or 2-5, rarely 8, inserted just above the disk or upon the disk; when more than 1 usually the others with smaller anthers, or imperfect anthers, or without anthers. *Ovary* sessile, oblique, 1-locular with a lateral style; ovule pendulous from a basal or lateral funicle, horizontally; disk simple; ovule pendulous from a basal or lateral funicle, horizontally; solitary. *Fruit* a large fleshy drupe with a pressed fibrous stone. Seed large, compressed; testa thin; embryo with flattened, often oblique and unequal, aetines lobed, cotyledons.

*Calyx* and panicles quite glabrous:—

Petioles and long pedicels very slender; petals obtuse. *longipes.*

Niceties and short pedicels very stout; petals acute, yellow with reddish streaks; disk pressed fibrous stone. Seed large, compressed; testa thin; embryo with flattened, often oblique and unequal, aetines lobed, cotyledons.

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.

Chittagong.

396. MANGIFERA INDICA Linn.; F. I. i. 641; F. B. E. D. M. 147.

Everywhere planted.
A tree. J7riya, J3engr. and ffn^ Am, amb ; Santa Kol. Ul, uli; Magh. Ing-sára.

204. Swintonia Griff.
Tall glabrous trees; teaves alternate, long - petiolea; entire; stipules 0. Flowers in terminal and axillary large 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 cap ovule solitary, pendulous from a basal funicle. Fruit an \*, smooth, sessile, leathery drupe, subtended by the 5 en reflected petals. Seed erect; testa thin; albumen 0; coty amygdaloid.

397. SWINTONIA FLORIBUNDA Griff. S. Griffithii F. B. A iS. SchwenMi E. D. S. 3040.

Chittagong.

205. Drimycarpus Hook. f.
Tall trees; J^es alternate, petioled, simple, quite stipules 0. Flowers small, polygamo-dioecious, in axillary racemes. Calyx superior, 5-lobed; lobes obtuse, imbricate. 5, erect, orbicular, imbricate; disk broad annular. \\ inserted at the base of the disk. Ovary inferior, short, stigma capitate; ovule solitary, lateral. Fruit! a n * drupe with resinous flesh, transversely obliquely ovoid; thickly leathery. Seed attached to wall of cell; testa membra*10 albumen 0 ; embryo thick, with large cotyledons.


D. 834. Holigarna racemosa F. I. ii. 82.

Chittagong.
206. Holigarna Ham.

Tall trees; leaves alternate, simple, entire, coriaceous; petiole one or two pairs of deciduous appendages; stipules 0.

Small, polygam-dioecious, crowded in axillary and terminal clusters or panicles. Calyx superior, tube cupular, teeth 5 connate below and adnate to edge of disk; petals 5, connate below and adnate to the petals below. Ovary 1-locular; styles usually 3, sometimes 4-5, terminal, fleshy or clavate; ovules solitary pendulous, lateral but sessile. Fruit a resinous, acrid, subcompressed, oblong drupe; stone coriaceous. Seed parietal, testa men 0; embryo thick with large cotyledons.

**OLIGARNA LONGIFOLIA** Roxb.; F. I. ii. 80; F. B. I. ii. 37; E. I. H. 317.

Chittagong.


207. Semecarpus Linn. f.

Trees, leaves alternate, simple, entire, coriaceous; stipules 0.

Polygamous or dioecious, in usually terminal clusters. Calyx 5-6-fid; segments deciduous. Petals 5-6, imbricate; Stamens 5-6, inserted at the base of the tube; ovary 1-locular, stamens imperfect or 0; styles 3-5, subdavate; ovule solitary, pendulous from a basal seat. Fruit a firm drupe oblong or subglobose, oblique, on a fleshy receptacle formed of the accrescent disk and pericarp. Seed resinous acrid. Seed pendulous; testa coriaceous, somewhat fleshy; albumen 0; embryo thick with large cotyledons.

**SEMECARPUS ANACARDIUM** Linn. f.; F. I. ii. 83; F. B. I. 35; E. D. S. 1041.

Behar; Chota Nagpur.

A tree. Hind, and Beng. Bhela; Uriya Bhallia; Santal, Soso; Kol. Loso.
401. SBMECARPUS SUBPANDURIFORMIS Wall.; F. B. I. 85.

Chittagong.

A tree.

208. Anacardium Bottb.

Shrubs or trees; leaves alternate, petioled, simple; stipules 0. Flowers small, polygamous, in terminal panicles. Calyx 5-partite; segments erect, imbricate. 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, ascendent; pericarp cellular and filled with oil.

402. ANACARDIUM OCCIDENTALE Linn.; F. I. ii. 20; E. D. A. 1014.

Cultivated and sometimes appearing as wna, * r Orissa and Chittagong.

A small tree, native of America. Hind. I. 3,

Kaju, hidgli-badam.

209. Odina Roxb.

Trees; leaves alternate, clustered at the ends of the branches, odd-pinnate, deciduous; leaflets opposite; stipulate, stout, sessile. 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 or 0, inserted within the disk. Ovary rudimentary, 4-partite. Stamens 8-10 or 0, sessile, oblong, 1-locular; styles 4, stout, stigmas capitellate; ovule solitary, pendulous. Fruit a small compressed drupe, tipped by the distant styles; stone hard, compressed; albumen 0; embryo curved.

403. ODINA WODIER Roxb.; F. I. ii. 293; F. B. I. 29;

E. 1). o. 88.

In every province, including the Sundribuns.
A deciduous tree. Le<#. Jiyal; ffinrf. Jhingan; Urlya Indrainai; Kol. and SantaL Dhoka.

210. Rhus Linn.

often an acrid juice; leaves alternate, or pinnate; leaflets entire or serrate; polygamous. Calyx small, 4-6-partite, segments imbriolate; disk cuneal lobed. Stamens 4-6, or 10, filaments subulate. Anthers in fleshy obovoid flowers often imperfect. Ovary sessile, ovoid or simple; styles 3, free or slightly connate below, stigmas capitate; ovule solitary, pendulous from a basal funiculus.

A large tree, with odd-pinnate leaves. Yernac.

211. Tapiria Juss.

A scandent, usually softly villous shrub.

212. Spondias Linn.

of t. leaves alternate, odd-pinnate, usually crowded at the ends Ranches; leaflets opposite; stipules 0. Flowers small,
polygamous, in terminal spreading panicles. *Calyx* small, 4-5 fidi, deciduous; lobes slightly imbricate. *Petals* 4-5, *P*® valvate; disk broad, cupular, crenate. *Stamens* beneath the disk. *Ovary* sessile, free, 4-5-locular; *s J*® a connivent; ovules solitary, pendulous in each locule.

Leaflets 4-6-jugate, quite entire. Leaflets 6-8-jugate, orenate-serrate.


In all the provinces; often planted.

A tree. *Vernac.* Amra. The Indian Hog-Plum.

407. Spondias dulcis Willd.; F. I. ii. 452; F. I. 13-

E. D. S. 2644.

Occasionally planted.


Order XLIY. Moringe-fi.

Trees, with soft white wood and with gummy *j®®* leaves alternate, compound, simply or 2-3-pinnately divide opposite, entire; stipules and stipels 0 or reduced bases of leaves and pinnules. *Flowers* irregular, herinap axillary panicles. *Dish* lining calyx-tube. *Sepals* cupular 5-cleft calyx; segments unequal, imbricate, *t®®* posterior, subpetaloid, deciduous. *Petals* 5, unequal, pair small, the lowest largest. *Stamens* decline opposite petals with 5-7 alternate sterile; filaments thick, inserted on margin of disk; anthers versatile, dehiscence longitudinal, extrorse. *Carpels* 3, connate in 1-locular ovary with 3 parietal placentas; style slender stigma truncate, perforated; ovules many, 2-senate placenta, pendulous, anatropous, with raphe ventral. 1-celled loculicidally 3-valved capsule, corky and pitted.* Seeds* many in the depressions of the valves, winged or WITH albumen 0; embryo straight.
213. Moringa Lamk.

The only genus. Characters those of the Order. 


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.

S l a e connectate, partially or completely, in a tube adnate to or losing the ovary, persistent or with the upper portion deciduous, rarely free. Disk adnate to the calyx-tube and free from the ovary; rarely epigynous and within the stamens. Petals connate with the sepals or sometimes fewer by suppression, Inserts at the apex of the calyx-tube or on the disk lining the vais, occasionally absent. Stamens variously indefinite or definite 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.

S l a e alternate, 1-3-foliolate or imparipinnate; leaflets coriaceous, entire; stipules 0. Flowers persistent or deciduous; leaves hermaphrodite, regular or somewhat 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 rarely valvate, linear-oblong, free or slightly connate below. Stamens 10, occasionally declinate, alternately shorter and longer, sometimes 5, the shorter antipetalous series being imperfect, perigynous or hypogynous within the disk; filaments filiform, often connate below; anthers short, didymous; dehiscence longitudinal and rarely after flowering extrorse by torsion. Carpels 5,
HEN GAL PLANTS.

rarely fewer or more, globose, free, hirsute, 1-locular; styles subulate or filiform, stigmas minutely capitate or 2-lobed or imbricated, ovules 2, collateral from inner angle at base of the ovary ascending, orthotropous. Fruit of 1, rarely 2 or more, sessile stalked, 1-, rarely 2-seeded follicles dehiscing by ventral sutures. Seed erect, often with basal arillus; testa thick, sometimes fleshy below the middle; albumen fleshy or 0; embryo with amylaceous 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.

214. Rourea Aubl.

Shrubs, sometimes scandent, or small trees, with odd-pinnate or pinnately 3-foliolate leaves; leaflets subopposite or alternate. Flowers small, in axillary panicles, on usually slender pedicels. Sepals connate in a short tube with deeply partite limb; lobes 5, orbicular, imbricate, enlarged and clasping the base of the fruit. Petals 5, usually linear-oblong, exceeding the calyx. Stamens 10; filaments form, alternately shorter and longer, connate in a ring at the base of the fruit. Carpels 5, usually 4 imperfect and reduced to functionless style, the fifth perfect with slender subulate style. Fruit a sea 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. 1850.

Cnestis monadelpha F. I. ii. 454.

Tippera, Comilla; Chittagong.


215. Connarus Linn.

Trees or shrubs, with odd-pinnate or pinnately 3-foliolate leaves; leaflets opposite. Flowers small, in axillary panicles rarely spike-like racemes, on slender pedicels. Sepals connate in a short tube, HB deeply partite; lobes 5, oblong, slightly imbricate, not much or at all enlarging, spreading, not clasping the base of the fruit. Petals linear, exceed the calyx-limb, alternately shorter and longer, the shorter contrary with
Motionless anthers, connate below in a ring. Carpels 6, usually
perfect, minute or suppressed, the fifth ovate with subulate
tyle. Fruit a stipitate follicle, enlarged upwards. Seed solitary,
Hate; testa smooth, shining; albumen 0.

CONNARUS PANICULATUS Roxb.; F. I. iii. 139; F. B. I. * ^

E. D. c. 1773.
Chittagong.
A large climber.

Order XLVI. **LEGUMINOSÆ**.

HB "«, shrubs, or trees. Leaves alternate rarely opposite,
compound rarely simple, 1-foliolate, or pinnately
3-foliolate or odd- or even-pinnate, less often digitately 3- or
more foliolate, rachis sometimes ending in a tendril, occasionally in
a sinuate, occasionally leaf-like; stipules 2, usually free, lâieij'
minute, leaflets often stipellate. Flower* usually irregular,
hermaphroditic, rarely regular or polygamous; in axillary leaf-
opposed or terminal racemes or panicles, rarely solitary, bracteate
and usu"ly 2-bracteate. Disk adnate to calyx-tube. Sepals 0,
usually connate, rarely free, often unequal, sometimes forming a
2-lateral calyx. petal 5, rarely fewer by abortion, usually free
and unequal. Stamina 10, androecous or sub-hypogynous, rarely
with X arrest, sometimes indefinite; ittamenta free or
connate; anthers 2-celled; dehiscence usually longi-
tudinal lateral. Ov"f, free, almost always a solitary carpel; style usually
declinate, stigma capitate terminal, or oviiq
very rarely excorose; ovules usually several 2-senate, i
areolaceous; r
typous.

Fruit usually a dry legume splitting along bow
openly or se~anting into a continuous indehiscent lomentum 01
indehiscent 1-seeded joints; rarely a drupe, f.
very rarely membranous coat, occasionally with
a membraneous coat, occasionally with
albaceous in 0 or scanty, very rarely cartilaginous; embijo

Or leafy cotyledons.

blowers h, eg, l; petals imbricate; stamens usually 10, (9 + l)[p. 300]
2-fid delphous (standard) outermost; stamens very of ten 1-adj
Subord.
*Calyx divided into lobes (except in some Daiihinias) down to the disk; upper petal innermost; stamens almost always free [P. 359].

Suborder **C7ESALPP**

Flowers regular; petals valvate; stamens often indefinite [p. 359].

Suborder **M1OBEE**

**Suborder I. PAPILIONACEvE.**

Herbs, shrubs, or trees. *Leaves* simple or digitated, pinnately compound, rarely 2-pinnate; stipels very hermaphrodite, never capitate, very rarely spicate. United above the middle and beyond the disk in a tubular calyx with truncate, 5-toothed or 5-lobed linta or the two upper sepals connate and the limb 4-toothed, or the upper and three lower discretely connate and the limb rarely closed in bud and spathaceous in flower. *Petales* imbricate, erect or spreading, the upper (standard) outmost, or adnate below to stamens, the 2 lower (keel) inmost usually connate by their adjacent margins, the 2 lateral (wings) intermediate often attached in the middle of the petals all erect, subequal, or reduce. *Stamens* inserted with petals on the disk within the calyx, usually 10, free, or more often 2-adelphous the lower connate in a sheath the upper solitary free, rarely 2-adolphous in bundles of 5 each, rarely 9 the upper absent, or 5 the intermediate alternately imperfect and perfect, or 6 the intermediate alternate imperfect, 4 of the sheath perfect, very rarely numerous. *Carpel* free. *Seeds* usually with little or no albumen; embryo with usual accumbent cotyledons.

Stamens 1- or 2-adelphous:— [p. 365]

Plants with basifixed hairs or glabrous; anthers not mucronate or gland-tipped:— [p. 365]

Pod dehiscent by both sutures:— [p. 363]

Leaf-rachis ending in a bristle or tendril; leaflets even-pinnate:— [p. 361]

Stems herbaceous; flowers axillary solitary, or racemose, stipules large foliaceous, oblique at base; stamens 10, 2-adelphous the vexillar 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]
**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.

- Stems woody; flowers in terminal raceme; stipules narrow, clipe at base; stamens 9, 1-adelphous in a sheath slit above, vexillary 0; style not bearded; pod compressed [p. 360]

Abras.

- 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 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-foliolate or petioled 1-foliolate, glandular beneath:

  - Pod turgid; leaves digitately 3-foliolate, with bracts small, or 1-foliolate with bracts large; funicle centric

Flemmingia.

- Pod depressed between the seeds; leaves (in our species) 1-foliolate with bracts small; funicle attached near end of hilum.

Eriosema.

Leaves pinnately compound:

- Leaves pinnately 3-foliolate, or if 1-foliolate \(Growth\) with 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; funicle centric:[p. 362]

  - Calyx-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\N 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
acute, deeply transversely lineate between the seeds

CajanuB.

§SLeaves not glandular: Wflets stipellate:—*

p. 361]

Style bearded below stigma;—

Pod woody, septate between the velvety seeds;
stigma oblique..............................Dybolobium*
Pod coriaceous, not septate between the smooth
seeds:—

Stigma oblique:—

Keel spirally twisted . Phaseolus
Keel not spiral:

Style filiform . Yigna.
Style flattened upwards. . Pachyrhizus

Stigma terminal:—

Pod flattish, not winged ............... Dolichos.
Pod square, 4-winged; stamens submon-
adelphous...............................Psopl.locarpus*

Style not bearded below stigma: —

Nodes of racemes not swollen: —

Calyx-tube cylindric, with oblique truncate mouth;
style dilated in the middle; standard erect Dumasia-
Calyx-tube campanulate, margin toothed, the
upper teeth subconnate — «»«»«» . stamenadelpous:
reflexed:—

Stamens at length 2 adelphous; nnui-
fertile ........................................Glycine.
Stamens persistently 1 adelphous; ♀ alternzte
anthers sterile................................Teraninus*

Nodes of racemes swollen: —

\$s 1-adelphous:—[p. oti.]

-lip of calyx projecting .......... Canavali
upper-lip of calyx not projecting:—
Pod oblong, turgid, 1-2-seeded; anthers 2-morphous, 4 sterile. .......... Dioclea*
Pod linear, flat or suboylindric, many-seeded; anthers uniform, sometimes sub-2-adelphous. ................. Pueraria.

*Stamens 2-adelphous (9 + 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.

Pods dehiscing at seed-bearing apex only, elsewhere seedless and indehiscent:—[p. 361]
Petals unequal; flowers large. .......... Butea*
Petals subequal; flowers small. .......... Spatholobus.

*leaves pinnately 5-many-foliolate; pods dehiscing from apex to base :—[p. 361]
Style bearded below the stigma; flowers with very unequal petals, standard large. .......... Clitoria.
Style not bearded; petals dim.-dim. 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 :
's»s reticulately veined; pou thick, tardily

*Pod indehiscent or rarely (some Desmodti) opening along the ∨ntral suture :—[p. 300]
*Leaves not pel lucid-dotted :—[p. 365]
= Pod not segmented, always indehiscrete.
leaves odd-pinnate :—[p. 364]
+ Trees or strong woody climbers; icafris ent... n ^2 1
Leaflet'opposite, stamens usually submonadelphous the vexeqary stamen united in the middle to the sheath, sometimes 2-adelphous (9 + 1) :

Pt«d wingless

Pod winged

Leaflets*distinctly alternate :

Flowers -small; pod* narrow

Flowers meuUnm ; pods suborbicular . . . Pterocarpus

← Herbs ; leaflets with tlv> veins produced as marginal teeth
leaves always 3-foliolate :—[p. SW]

Pod subglobose, hardly longer than calyx . . . iftilHA^*°

Tod flattened, much longer than calyx :

Tod straight or curved, not spiral . . . . Trigonell*

Pod spirally twisted

x Leaves even-pinnate, the rachis ending in a bristle; herbs hypogaa! fruits [p. 868]

• Pod of 1 or several indehiscent 1-seeded segments; in Detmodia dehiscing along the ventral suture:—[p. 868]

Leaves ext stipellate :

Stamens 1-adelphous, anthers dimorphous; leaves digit*ly
2-4-foliolate; joints of pod muricarated, several . . . . Zom*°

Stamens 2-adelphous, anthers uniform :

Stamens 9 in a sheath slit above with a free vexillary
leaves 1-3-foliolate :

Stipules spinescent; leaves always simple ; joints
hardly separating; vexillary stamen always free
Stipules not spinescent; leaves usually 3-foliol
1-foliolate; pod a solitary 1-seeded flattened vexillary stamen sometimes partially united to

Stamens in 2 lateral bundles of 5 each; leaves pinnate; J
of pod papillose or weakly muriculate:—

Leaves even-pinnate, end-leaflet replaced by • brittle;
folded within the calyx

Leaves odd-pinnate; pod straight exserted ; marsh pla°nts

Leaves stipulate; stamens (9 + 1) dladelphous or w
adelphous; joints of pod usually about as long as broad:

Ovary 1-ovuled; leaves l-foliolate

Ovary 2- or more-ovuled:

+ Pod folded within the calyx:—[p. 865]

© Calyx-teeth setaceous, not accrescent [p. 866]
LEGUMINOSAS.

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;

Ougeinia.

Pod indischiscent [p. 868].                     ..Psoralea.

\[\text{\textit{Plants with hairs on twigs, leaves and calyx fixed by their centres;}}\]
\[\text{\textit{anthers mucronato or gland-tipped :—fp. 368}}\]

Cyamopsis.

\[\text{\textit{1-adelphous, sheath tubular; pod thick; leaflets 3. large,}}\]

\[\text{\textit{2-adelphous (9 + 1), sheath slit above; pod slender;}}\]

Indigofera.

\[\text{\textit{1-adelphous (9 + 1), sheath tubular; pod thick; leaflets 3. large,}}\]

Sophora.

\[\text{\textit{2-adelphous; leaflets 3. or more-foliate}}\]

Ormosia.

\[\text{\textit{2-adelphous; leaflets usually small, entire; leaves simple or digitately or}}\]

Dalhousiea.

\[\text{\textit{3-foliate; bracts and bracteoles large, opposite, persistent}}\]

216. Cicer Linn.

\[\text{\textit{with usually even-pinnate rigid Leaves; leaflets}}\]
\[\text{\textit{strongly veined and deeply toothed, the}}\]
\[\text{\textit{with a bristle or tendril, sometimes in cultivated forms}}\]
\[\text{\textit{a leaflet; stipels 0. Flowers axillary solitary;}}\]
\[\text{\textit{5 Jaceolate Hubequal teeth. Petals exserted; standard}}\]
\[\text{\textit{broad}}\]
\[\text{\textit{2 many-ovul cothors}}\]
\[\text{\textit{obovate free; keel incurved. Stamens 10, the vexillary}}\]
\[\text{\textit{connate; anthers uniform. Ovary sessile, incurved, heardleRH; stigma terminal,}}\]
\[\text{\textit{oblong sessile turgid pod, narrowed into the}}\]
\[\text{\textit{persistent small. Seeds subglobose or irregularly ovoid hilum}}\]


217. Yicia Linn.

Annual or perennial herbs; leaves even-pinnate; rachis ending in a twisted tendril, rarely in a simple point; stipules serrate, sagittate, stipels 0. Flowers subsessile axillary 1-3, or peduncled axillary racemes; bracts small caducous, bracteoles 0. Sepals connate in a campanulate tube often oblique; lobes 5 sub-equal or the 2 upper shorter and the lowest longer than the lateral. Petals exserted; standard obovate emarginate, narrowed into a wide claw; wings oblong oblique, adnate in their middle to the shorter keel. Stamens 10, the vexillary one free or slightly connate with the rest; anthers uniform. Ovary subsessile or stipitate, usually many-ovuled, rarely 2-ovuled; style inflexed or flattened, usually pubescent with a dorsal tuft or subapical ring of hairs, rarely glabrous; stigma terminal, capitate. Fruit a compressed pod, continuous within. Seeds globose, rarely compressed; hilum oblong or linear.

Stems prostrate; leaflets 4 or more pinnate: mi-liis of leaf ending in a tendril:

Flowers solitary, almost sessile, large and m. i.; i. iu. and xerous, y seeded:

Leaflets wide, obtuse.

Leaflets narrower in the leaves retusa.

mtiva var. aiuviataio.

Flowers several in a pedunciculi tuceiae, small ('15 in.); pods show hairy, 2-seeded.

Stems erect; leaflets 3 or fewer pairs; rachis of leaf ending in a point.


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 _petioles_ 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-fld. racemes; _bracts_ and _bracteoles_ 0. _Sepals_ connate in an oblique tube; lobes 5, _cleft_, subequal. _Petals_ exserted; standard broad, narrowed to a vert 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, 0. _ovary terminal_. _Fruit_ a compressed 1-2-seeded pod, continuous within. _Seeds_ compressed, lenticular; _hilli_ ovate 0: oblong.

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, _funneled_, solitary or race mod; _bracts_ usually minute, caducous, _bracteoles_ 0. _Sepals_ connate in an obliquely campanulate tube _retrates_ gibbous behind; _teeth_ 5, subequal or the 2 upper shorter. _*Claw* moro or less exserted; standard broad, narrowed to a short, _wings falcate_ _bovate_ 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

Leaves pinnate, with 1-2 pairs of leaflets; stipules small semisagittate: flowers blue or sometimes white............................... saliva  

A general, but not common, field-weed.  
417. LATHYRUS SATIVU9 Linn.; P. I. iii. 322; F. B. I. ii. 179; E. D. L. 100.  
Generally cultivated.  

220. Pism Linn.  
Herbs, diffuse or climbing; leaves oven-pinnate; leaflets 1-3 pairs; rachis ending in a simple or branched tendril or a simple point; stipules foliaceous, semicordate or semisagittate, stipels 0. Flowers axillary peduncled, showy, solitary or in few-fl.d- raceme; bracts very small caducous, bracteoles 0. Sepals connate in & oblique tube sometimes gibbous behind; lobes 5, subequal or in the 2 upper wider. Petals much exerted; standard very broad; narrowed to a short, wide claw; wings oblong falcate, adnate to their middle to the shorter incurved obtuse keel. Stamens 10, vexillary filament free or connate by its middle with the rest, the sheath of which is scarcely oblique; anthers uniform. Ovary sub sessile, many-ovuled; style in flexed, hard, dilated with reflexed edges, compressed laterally towards the top and there longitudinally bearded on the inner side. Fruit an obliquely pointed compressed or subturgid pod, continuous within, several-seeded. Seeds subglobose; hilum oblong.  
*Standard white or pale violet, wings and keel purple; seeds depre ed, angular, <rey or purple, mottled; point of attachment of stipules P[.  
[p. 369]
Abrus Linn.

Shrubs or undershrubs, with twining stems; leaves even-pinnate, many-paired, subdeciduous; rachis ending in a simple D-shaped pule, subscarios, striate, lanceolate, deciduous; stipels milky, persistent, rigid. Flowers small, distinctly pedicellate—cemosely fascicled on the nodes of terminal peduncles or axillary branches; bracts small, ovate, deciduous; bracteoles under the calyx 2, lanceolate, deciduous; sepals 5, connate in a subtruncate tube, the teeth short, entire, subconnate. Petals exserted; standard ovate narrowly oblong, short claw slightly adnate to the staminal tube; wings f linear spreading, free, shorter than the curved keel. Sta, oonnate in a sheath split along the top, the vexillary flaments free portions of filaments alternately longer and shorter; others inferior. Ovary subsessile, several- or many-ovuled; style short, incurved, not bearded; stigma terminal capitate. Fruit an oblong or linear pod, considerably or much compressed. Seeds globose or compressed; testa smooth, shining; hilum shortly oblong. Pods twice to thrice as long as broad, fairly thick, somewhat corrugated; seeds rounded.

420. Ahkus PRKUTOBIU8 Linn.: Fl. I. iii. 257; P. B. I. ii. 175; E. T. A. 51.

In all the provinces.

421. AMKI-BELLI Wall.: Fl. R. I. ii. 175.
N. Bengal; E. Bengal; Tippers; Clutttagong.
A slender climber.
222. **Heylandia DC.**

Striate herb; leaves close-set, alternate, simple. *Flores* **vers**

A prd. "L" solitary. *Sepales* connate in a turbinate tube; teeth small, ay,Æ'lower longer than the 2 subconnate upper. *Petals* lance<,> aorted; standard suborbicular with 2 basal scales at the short claw; wings short, obovate-oblong; keel narrow, to<,> ealals connate, narrowed to an incurved beak. *Stamens* 10-HF; d in a tube slit above; anthers alternate, short versatile, and uil/as basifixed. *Ovary* sessile, 2-ovuled; style abruptly incurved; Ionise, elongated, longitudinally bearded above; stigma terminal, at ht a Hat oblong 1-2-seeded pod, continuous within. 6**seeds**

Frwnt strophiole; funicle filiform.

with. **HKYLAXIHA LATEBROSA** DC; P. B. I. ii. 65. **Grotalaria**

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* ^^bies decurrent on the stem, occasionally small or 0- **tac** often showy, in terminal or leaf-op posed racemes, rarely solitary; bif small or 0, rarely leafy; bracteoles on pedicel or sometimes at calyx-base small, rarely 0. *Sepals* connate in a short tu'5; teeth 5, linear or lanceolate, subequally discret, rarely the 2 upper or the 3 lower, or both, more or less oonnajoJ, upper and lower lips, occasionally the 4 upper subconn; lateral pairs. *Petals* as long as or exceeding calyx; stand* 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 conjunct in a sheath slit above; anthers alternately short versatile, and long basifixed. *Ovaries* sessile or rarely stipitate, 2-movuled; style much incurred, often abruptly inflexed, more or less bearded longitudinally above; stigma oblique, small. *Fruit* a globose or oblong very turgid or inflated pod, continuous withi)**Seeds** small, strophiole with (11, without pinole; funicle filiform.

*Leaves* digitately compound: [p. 371J

Leaves almost alwnys 5, KBMtimei 7. <iy I.U. ly >, narrowly
oblanceolate, ovate or oblong:—
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.
  Leaflets oblong, acute; pod densely pubescent bracteata.
Pods glabrous:—
  Pods subsessile:—
  Leaflets oblong, acute Browtiui,
  Leaflets obovate, obtuse Sauiana.
Pods with u long, slender, filiform uynophore; leaflets obovate-oblong acute hvburni/olia.
Prostrate, diffuse, herbaceous; krauts conspicuous, foliaceous, persistent; pods small, glabrous, long-stalked orUensis.
Pods small obliquely subglojK.se, 2-seeded; leaflets small ob-lanceolate; bracts liyum minute. mtdieaginea var. ne;lecta.
leaves simple:— [p. 371]
Stipules pe^aiatiiig as long recurrent wings along the twigs; pod linear- glon^ many-seeded, stipitate, glabrous. alata.
Stipules, if present at all, not recurrent along the twigs:—
Erect shrubs or herbes; 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; tics usually blue and white irm<< osa.
  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 junccea.
Herbs with stout, anbranohed stems; racemes terminal only; pods glabrous:—
  Stipules subulate, minute; bracts deciduous; leaves obtuse retusa.
  Stipules foliaceous, leafy; bractB reflexed persistent; leaves acute sericea.
Diffuse low herbes, or rarely shrubs; stipules small or 0:—
  'Low annuals or almost ttmifitfl shrubs with many ascending branchef and terminal raemee; corolla hardly, if at all, ex- tered:— [p. 372]
UKXOAL FLAMS.

J’ods obviously exserted from calyx:—

Stipules linear, persistent; bracts lanceolate, foliaceous; leaves linear-oblong, obtuse; pods subsessile, glabrous...mynaornn.

Stipules 0:—

Pods silky; bracts minute, lanceolate; leaves linear, very small; annual, densely silky herbs.

Pods glabrous:—

Bracts lanceolate, foliaceous; leaves linear, obtuse; pods annuliferous, finely hairy herbs.

Bracts lanceolate, very minute; leaves linear or oblanceolate, obtuse; perennial, obscurely silky, slender

Plants included in calyx, glabrous; annual herbs:—

Stipules 0; upper calyx-teeth connate; bracts and bracteoles very minute; leaves linear or oblanceolate, obtuse:—

Racemes capital or subumbellate...nana var. patula.
Racemes elongated, lax...ulmifolia.

Stipules minute, setaceous; calyx-teeth all elongated; bracts and bracteoles long:—

Flowers in densely congested round heads; bracts fttd

bracteoles broad, ovate-acute; leaves ou...

subacute...

Flowers in lax or elongated racemes; bracts and bracteoles narrow; leaves linear or lanceolate:—

Racemes elongated; flowers close, blueish, usually minute; bracts and bracteoles setaceous...ilijlor.

Flowers short; flowers lax, yellow, always few, bim.

Prostrate herbs with flexuous, trailing stems; flowers lateral, solitary or in few-flowered racemes:—[p. 371]

Pods silky:—

Corolla hardly exserted; pods finely silky, at length glabrescent.

Bubglobose; stipules very minute or 0;...bulvug3.

Corolla distinctly exserted; pods finely downy, oblong; stipi 10.

small, linear...

Pods glabrous:—

Stipules 0:—

Leaves obliquely cordate; pod short-stalked...trichophora.

Leaves obovate-oblong; pod subsessile...prustrata.

Stipules present:—

Stipules small, lanceolate; bracts deflexed; pod sessile...25-30 in. long...aciciiiari.

Stipules foliaceous, persistent, often deflexed; bracts spreading; pods shortly stalked, 1-1.25 in. lour
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 BRACATEATA Roxb.; F. I. iii. 278; F. B. I. ii. 83.
Chittagong.
A small shrubby species.

426. CKOTAULBIA BROWNEI Bert. C. **triafit** F. I. ii. 84
partly.
Cultivated and also in some places naturalis d.

427. CROTALARIA SALTI NL Andr. C. **trutila** F. B. I. ii. 84
Partly ; E, D. C. 2159.
Throughout Bengal, including the Sundriabuns; and in Chittagong.
A roadside weed, probably introduced during the last century. **Santa I.** Can junk a.

428. IOROTALAIU LUBXIFOLXi Linn.; F. I. iii. "27"; F. L ii. 84; L. D. C. 214a
F. Bengal.
A low shrub. **Hind. Man.**

CROTALARIA ORIXENSIS Ilottl.; F. I. iii. 276; F. B. I. ii fi.3
Behar; Orissa.
A diffuse herbaceous perennial with slender, much-undulated stems.

429. CROTALARIA M b i v 1)C. var. **NHGLKITA**
F. B. I. ii. 81. **C. procumbmu** F. I. iii. 278 partly.
C. 2151.
Chota Nagpur.
A diffuse perennial with slender ascending stems.

Bengal; Behar; Chota Nagpur.
An undershrub.

**TBBBUCCOU** [inn.; F. B. I. ii. 77. **C. an$**
Orissa; C. Bengal; Sundribuns; Chittagong.

433. CROTALARIA TETRAGONA Roxb.; F. I. iii. 268; F. B. I. ii. 75.
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.

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.
Bhil-jhanjhan.

436. CROTALARIA BSIVICKA Linn.; F. I. iii. 278; F. B. I. ii.
E. D. c. 21:V7.
Chota Nagpur; N. and E. Bengal; Chittagong.
A robust herbaceous undershrub, 8-4 feet high.
Bhil-jhanjhan.

437. CROTALARIA KYBORENSIS Both; F. B. I. ii. 70.
lacea
C. and W. Bengal; Chota Nagpur.
A much-branched herb; stems 1-2 feet, either long.
spreading him's.

438. CROTALARIA LEU L'ESILLA llyenc ; F. B. I. ii. 70.
I Sehar.
A small herb, with a stem P> in. high.

439. CROTALARIA UIRTA AVilU.; F. B. L ii. To. r'. c/a
F. I. iii. 268.
W. Bengal; Behar.
A diffuse annual her!).

440. CROTALARIA VILHII) Heyne; F. I. ii. 71.
F. I. iii. 265.
Chota Nagpur, coinami on; Behar; NN Bengal.
A small undurshrub OK ihmbj l-2 ft high.

441. CROTALARIA NANA Binn. far. PATULA Bak.; F. B. I. ii.
Bengiil, but proliably introduced from Hun.
An annual, stems 6-8 in. hi.

142. CROTALARIA UMDOLU Liu.- f.; F. I. ii. 266; F. n.72.
443. **Crotalaria dubia** (Jrah.; F. B. I. ii. 76).

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 with silky, brown hairs.

446. **Crotalaria globulosa** Wight. *C. yluOuan 1 .'.1.'.1. ii. 00.

Behar, rare.

A trailing annual, stems 1-2 feet long.

447. **Crotalaria uirsuta** Avilld.; F. T. iii. 270: F. I. i. ii. f.8.

Behar.

Stems 1-2 feet long, diffuse, much branched.

448. **Crotalaria acicularis** H. iin.: F. B. I. ii. 68.

In all the provinces.

A diffuse herb, with slender stems 6-20 in. long. *Deng.

Chhoto-jhanjhann; Sanlal. Nanha or katic* junkha.

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 6-20 in. long.

450. **Crotalaria ferruoinea** Grah.; F. B. I. ii. 68.

*Hittagong.*

A diffuse herb, with rather stout stems and silky branches.

224. **Flemingia lluxb.**

Undershubs or Hhrubs, erect or prostrate, rarely herbs; *leaves* foliolate or oftener digitately 3-foliolate, glanddotted beneath; *Pules striate, often deciduous; stipels 0. Flowers spicately or capitately racemose, or paniced; bracts large foliaceous, or striate, persistent or caducous; bracteoles 0. *Sepal*
connate in a very short tube; teeth 5, lanceolate, subequal or the lowest longest. Petals slightly or hardly exserted, subequal in length; standard obovate or orbicular, 2-auriculate at base; wing 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 subsessile, 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 broad cordate folded membranous bract; cymes in copious panicles in the axils 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-lanced rounded at the base; bracts 1 in. long:

Lateral nerves all subequal, 8-10 pairs; bracts 1 in., finely puberulous, usually all obscurely cuspidate, sometimes the highest slightly emarginate. utrobrilifera.

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 lowest obscurely cuspidate. brqetentii.

Low shrubs, 1-3 feet high; leaves lanceolate with cuneate base; bracts 4 in. long, softly pubescent with long spreading white hairs, all emarginate. jumulinalis-

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. involueratn.

Bracts small, caducous:

Leaves simple, thin; flowers in lax panicles single or fascicled in leaf-axils and thyrsoid at ends of branches ...

juniutddta.

Leaves digitately 3-foliolate:

Flowers in copious axillary and terminal lax panicles; leaflets ob lanceolate-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. 877)
Branches and stems distinctly S-eomered; bracts much exceeding the buds. .................................................. stricta.
Branches rounded, stems slightly 3-cornered; bracts hardly exceeding the buds................................................. prtecox.
Bracts herbaceous; leaflets abruptly pointed or shortly acuminate :—[p. 376]
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 [p. 370] ....... nuna.

Chota Nagpur; W. Bengal; Chittagong.

Chota Nagpur.
An erect shrub.

454. FLEMINOIA FLUMINAUS Clarke.
Chittagong.
An undershrub.

455. FLEMINOIA CHAPPAR Ham.; F. B. I. ii. 227.
W. Bengal; Chota Nagpur; Orissa.
An erect shrub.

456. FLEMINOIA INVOLVCRATA Benin.; ii. i. n. -^9.
E. Bengal, Mymensingh.
A small erect shrub.

457. FLEMINOIA PANICULATA Wall.; F. B. I. ii. 227.
W. Bengal; Chota Nagpur.
An erect shrub.

468. FLEMINOIA LINEATA Roxb.; F. I. iii. 841; F. B. I. ii. 228.
N Bengal.
An erect shrub.

469. FLEMINOIA STRICTA Koxb.; F. I. iii. 842; F. B. I. ii. 228.
'hota Nagpur; Chittagong.
A t:ifi si.rill).
460. FLEMINGIA PROCOX C. B. Clarke.
    Chittagong.
    A shrub.

461. FLEMINGIA SEMIALATA Roxb.; F. I. iii. 336.
    var. semialata F. B. I. ii. 229 partly.
    Chota Nagpur.
    A shrub, 5-10 feet high. Santal. Bir but.

    N. Bengal; Chittagong; Tirhut.

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.

    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 leaves.
rather inconspicuously gland-dotted beneath; stipules nate opposite the petiole, lanceolate. Flowers axillary.
Solitary or geminate along the rachis, occasionally solitary.
Sepals connate in a campanulate tube; lobes 5, as long as the tube, subequal, or the two upper rather shorter and subequal.
Petals somewhat exserted; standard obovate or oblong, at the base; wings narrow, as long as the obtuse incurved and shorter than the standard. Stamens 10, vexillary free, the rest connate; anthers uniform. Ovary sessile, 2-ovate.
style filiform, beardless; stigma terminal capitate. Fruity somwhat compressed pod, 1-2-seeded, continuous within.
compressed oblique, without strophiole; funicle attached to 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. Gylista Ait.

A twining undershrub or shrub; leaves pinnately 3-foliolate, dotted beneath with resinous glands; stipules lanceolate, deciduous; stipules long subulate, persistent. Flowers axillary cemose, pedicels short; bracts membranous, hyaline, large, eciduous; bracteoles 0. Sepals connate in a campanulate tube, globes obtuse, scariosum, 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 inclosed, obtuse. Stamens 10, vexillary filament free, the others J to 5 anthers uniform. Ovary subsessile, 1-ovuled; style long m; atigma terminal capitate. Fruit a small, oblique pod, opened in the calyx, 1-seeded. Seed not strophiolate.

227. Rhynchosia Lour.

Twining or erect herbs or shrubs; leaves pinnately rarely sub-axially 3-foliolate, dotted with resinous glands beneath; stipules jate or lanceolate; stipes long subulate, or minute or 0. Flowers ~ and single or paired on the rachis of a raceme, rarely solitary; caducous; bracteoles 0. Sepals united in a short tube; lobes ling as tube or exceeding it, not or very rarely slightly enlarged in the subcalyx but the two upper more or less connate, petals fused or exserted, subequal in length; standard obovate or lar, spreading or reflexed, base auriculate; wings narrow; incurved, hardly beaked. Stamens 10, vexillary filament free, connate; anthers uniform. Ovary subsessile, 2-ovuled; style incurved filiform or thickened, bearded, 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 or S; funicle central; strophiolous present or 0.
Seeds arillate:— Dwarf undershrubs with flowers in peduncled pairs, petals longer than the petioles; pod turgid, downy, at length glabrescent between the seeds. Trailing herbs with flowers in close many-flowered race longer than the leaves; pod subcompressed, thorny spreading hairs, faintly lineate between the seeds. Seeds not arillate; twining herbs or shrubs; pods turgid, slender. Leaflets small, obtuse; pod glabrescent, slightly recurved. Leaflets large, acute; pod pubescent or downy, rather short:— Pubescence minutely glandular, not hoary, end-leaflet acute; lower calyx-tooth not exceeding the tube pubescent. Pubescence hoary, not glandular; end-leaflet round:— 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.


Beng. Shim-bhatraji.
Dunbaria W. & A.

472. **RHYNCHOSIA** SEKICEA Span.; F. B. I. ii. 225.

- Bengal.

473. **RHYNCHOSIA BRACTEATA** Benth.; F. B. I. ii. 225.

- Bengal.

A large climber with woody grooved branches.

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228. Dunbaria W. & A.

**Dunbaria.**

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**Corolla much exserted** large, marcescent; stems stoutish, woody; racemes lax, longer than the leaves; pod beset with bristly hairs bulbous at their bases.

**Corolla downy.** small, caducous; stems filiform; branches finely

---

**Flowers many**, in close subsessile racemes; pod distinctly stalked, hairy, not or shortly peduncled; pod sessile, glabrous

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474. **UNBARU GLANDULOSA** Prain. **Atylosia roshata** F. B. I. ii. 226.

- Bengal, Mymensingh.

A stoutish woody-stemmed climber.
475. DUNBARYA CIRCINALIS Bak.; F. B. I. ii. 219.
N. Bengal, Duars.
A slender woody climber.

476. DUNBARYA 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 tube, lanceolate-acuminate, the lowest longest, the upper in an entire or 2-toothed lip. Petals exserted, sometimes standard orbicular 2-aunculate 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 tia 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 convex narrowed at both ends, densely clothed with long spreading hairs.

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, P racemes; pod with convex faces, distinctly lineate.

477. ATYLOSIA BARBATA Bak.; F. B. I. ii. 216.
E. Bengal; Chittagong.
A woody climber.
LEGUMINOSOM.

478. Atylosia Platycarpa Benth.; F. B. I. "* ^<>-

^ora F. B. I. ii. 212.

Behar; Chota Nagpur.

A herbaceous climber.

479. Atylosia Scarabaeoides Benth.; F. B. I. n.

scarahcisoides 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 var. ty.

Behar; Chota Nagpur.

A woody climber.

230. Cajanus DC.

Erect shrubs; leaves pinately 3-foliolate, stipels 0. powers scattered on the ractus kernes; bracts caducous; bracteoles 0. Sepal* panulate tube; lobes short, acute or . connectate in a 2-toothed lip. Petals exserted; at tip. Stamen, 10; vexillary filament free, the rest connate; style a somewhat oblong style pod, outside obtuse, incurved; stigma sub sessile; ovary sub sessile; ovules scattered on the ractus, somewhat thickened in upper half, beardless stigmata; ovule few.

Fruit a linear, flat, involuom within; valves with depressed oblique 1

between the seeds, wing somewhat compressed, wth hilum; strophiole 0.


Cytisus Cajan F. I. iii. 325.

Cultivated everywhere.


231. Dysolobium Prain.

Tinners, sometimes large, usually woody; I^wi'te; leaflets not glandular beneath; stipules small, sometimes deciduous; stipels subulate, P ^ 6 ^, inconspicuous. Sepals 5, connate in a campanulate 2 *>, X , lowest lobe lanceolate, exceeding the rest but shorter than the tub
upper connate entire or emarginate. Petals exserte 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; style bearded longitudinally or caespitosely below the oblique 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 velvety; seeds sparsely velvety; pod keeled along the suture but not marked by longitudinal or caespitose beak; style bearded down the face. Leaflets rounded, cuspidate, chartaceous, hirsute on nerves, flowers 1-75 in. long; keel with a long laterally deflexed beak; style bearded down the face. Leaflets narrowed to apex, membranous, glabrescent; flowers 0-5 in. long; beak of keel not deflexed; style penicillate round the suture.

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.

Leaflets lanceolate; pod subquadrangular, prominently winged along the angles.

482. DYSOLOBIUM GRANDE Prain. Phaseolus velutinus
ii. 204.
N. Bengal, Duars.
A large woody climber.

Chittagong.
A large woody climber.

Chittagong.
A large climber.

485. DYSOLOBIUM TETRAGONUM Prain. Psoplocarpus tetragonum ii. 212.
N. Bengal, Duars.
A slender climber.
232. Phaseolus Linn.

Phaseolus

Boys, rarely under shrubs, twining, rarely suberect; leaves pinnate, leaflets eglandular; stipules membranous, lanceo-

ous, basifixed or peltately attached; stipels axillary, small or large, with rachis nodose; bracts and bracteoles often conspicuous, low, usually posterior to flowers fasciculately copiously racemose, peduncles nodose; bracts and bracteoles often conspicuous, low, usually posterior to flowers. Sepals 5, connate in a campanulate tube; petals exserted; standard longer than the rest and sometimes exceeding the other petals, subauriculate at base; wings ovate or oblong, equaling or exceeding the standard, adnate to keel above the claw; keel ovate or suborbicular, thickened or appended above the base, free, connate in a sheath; anthers uniform. Ovary subglobose, many ovule(s) J style enclosed in beak of keel and following ovule(s) or introrse stigma. Fruit a linear or falcate pod, chamber more or less septate or unseptate between the seeds. Seeds thickish, smooth; hilum shortly linear; strophiole 0.

Pods subcylindric, almost straight; flowers white and purple—

yellow subcompressed, recurved:

Racemes shorter than the leaves; flowers lilac to white vulgar is.

Racemes as long as or exceeding the leaves; flowers scarlet or

Pinkish-white multiform. Racemes in a capitate; flowers white and purple; pods linear, 0-seeded.

Pods 0-seeded:

Pul

Racemes in a subcapitate; leaflets distinctly shorter than petioles:—

Racemes as long as or exceeding the leaves; flowers scarlet or

Pinkish-white multiform. Racemes in a capitate; flowers white and purple; pods linear, 0-seeded.

Pods 0-seeded:

Pul

Racemes in a subcapitate; leaflets distinctly shorter than petioles:—

Racemes as long as or exceeding the leaves; flowers scarlet or

Pinkish-white multiform. Racemes in a capitate; flowers white and purple; pods linear, 0-seeded.

Pods 0-seeded:—

1st

yellow subcylindric; seeds rounded at ends; stems slender, diffuse;

subcapitate; leaflets distinctly shorter than petioles:—[p. 386]

As glabrous:—[p. 386]
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Stipules oblong; leaflets shortly 3-lobed, the central lobes late; stems almost glabrous.

Stipules lanceolate; leaflets deeply 3-lobed or dissected, the lobe ligulate; stems hirsute.

Pod somewhat compressed; seeds subtruncate at the apex, or in some cultivated forms of *P. calcaratus* erect or 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. "A biennial or annual climbing species. Beng. Bar.

Pods hirsute or pubescent, slightly compressed; flowers ending in short styles:—[p. 385]

Stems and pods densely beset with rusty hairs; pods septate between the seeds:—

Stems and pods sparsely beset with grey tomentum; pods always twining:—

Pods erect or suberect:—

Seeds black; stems subscandent

Seeds grey; stems diffuse:—*Munjo* var. Roxburghii.

Pods spreading or-reflexed:—

Seeds green; leaves dark-green; pods spreading horizontally radiatus.

Seeds yellow; leaves pale-green; pods distinctly reflexed radiatus.

Seeds black; leaves medium-green; pods spreading honzo radiatus.

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. 201.

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. Beng. Ban barbatii.

488. PHASEOLUS LUNATUS Linn.; F. I. iii. 217; F. B. I. ii. 201.

E. D. P. 489.

C. Bengal; Oriissa: cultivated.

A biennial or annual climbing species. Beng. Ban barbati; Hind Karsam bali pati.

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.*

- **Phaseolus multiflorus** Willd.; F. B. I. ii. 200; E. D. P. 493.
  
  Cultivated.

- **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, mugâni;

- **Phaseolus aconitifolius** Jacq.; F. I. iii. 299; F. B. I. ii. 202; E. D. P. 468.
  
  Chota Nagpur; Behar; Tirhut: cultivated.
  
  A diffuse trailing herb. *Hind.* Moth; *Beng.* Kheri;

- **Phaseolus calcarius** 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.

- **Phaseolus ricciardianus** Ten.
  
  Chittagong; cultivated.

  
  Chota Nagpur; Western Behar.
  

- **Phaseolus mungo** Linn.; E. D. P. 496.
  
  In most of the provinces, cultivated.


  In all the provinces, but especially the western ones, cultivated.


  In all the provinces, cultivated.

  A suberect herb. *Vernac.* Mung; hali-mung.
BENGAL PLANTS.

497/2. Var. AUREA Prain.  
\( P. miveus \) F. I. iii-297- 
F. B. I. ii. 203, partly. 
In all the provinces, cultivated. 

497/3. Var. GRANDIS Prain.  
\( P. Max \) F. I. iii. 295, not ot 
\( P. Mango \) F. B. I. ii. 203, partly. 
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 suberect or erect. 
Flowers fasciculately racemose, peduncles axillary with nodose; bracts and bracteoles small, deciduous. Sepals 5, in a campanulate tube; lowest tooth longer than the other 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 sessile, many-ovuled; style filiform or thickened or dilated upwards, 
tudinally bearded below the oblique or intorse stigma. Seeds reniform or subquadrate, smooth; hilum short latera.

Keel prolonged into a distinct beak.  
Flowers large (1-125 in.) purple; pods thinly silky at length 
cent.  
Flowers medium (-0 in. or ^0) ^0.  
Flowers reddish; hairs on pods and stems spreading 
Flowers yellow; hairs on pods adpressed, those 011 stems reflexed.

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 multi- 

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Clarke*.
Stems suberect; pods with short spaces between the seeds... Catjang.


Behar; Chota Nagpur.

A climbing or trailing species with perennial rootstock and herbaceous stems.

Vigna Vexillata Behar; Chota Nagpur.

Dolichos jillosus F. I. iii. 312.

Herbs with slender rigid stems.

Vigna Pilosa Bale.; F. B. I. B. 207; E. D. V. UB

Dolichos jillosus F. I. iii. 312.

Herbs with slender rigid stems.


A twining or trailing littoral species.

Dolichos jillosus F. I. iii. 312.

A twining or trailing species.

Vigna Catjang BndL; P- B. I. ii. 205; E. D. V. UB

DoUchos Catjang F. I. iii. 303.

In all the provinces, cultivated.


Vigna Catjang BndL; P- B. I. ii. 205; E. D. V. UB

DoUchos Catjang F. I. iii. 303.

In all the provinces, cultivated.

A climbing herb.

Pachyrhizus Bich.

We herbaceous twiners with great tuberous stocks; stipules Pinnately 3-ioliolate; leaflets lobed, glandular, olate, basiLed; stipels subulate. Fower. in the 0, and J"M nodes of long axillary peduncled racemes.; bra in a "teole, small setaceous) caducous. Sq " 5, ^ o a a n a t e a

Panulate tube; 3 lower teeth subequal acute, 2 upper o dard in an e marginsate lip. P<jteZs^moh existd, subequaL^an N w. 4x. obovate, 2-auriculate at base; wings oblong, m the ^ v e d , obtuse. Siemens 10 j vexillary falament tal^ many.

Conn*te in a sheath, antbers uniform. Ovary subsessile,
BENGAL PLANTS.

Pachyrhizus

ovuled; style somewhat thickened and subcircular.

longitudinally bearded below the introrse globose stigma.

a linear turgid pod, occluded but not truly septic within,

externally depressed between the seeds. Seeds ovate or

or orbicular compressed; hilum small; strophiole 0.

503. Pachyrhizus angulatus Eich.; F. B. I. n\ 207.

P. 1. Dolichos bulbosus F. I. iii. 309.

Cultivated, fairly generally.

A climber with somewhat woody stems, and a


235. Dolichos Linn.

Herbs or undershrubs, twining prostrate or suberect;

natively 3-foliolate, leaflets eglandular; stipules small,

stipels subulate. Flowers axillary, solitary or fascicled, or fas

lately racem on axillary peduncles with nodes tumid or i

bracts and bracteoles minute, subpersistent. Sepals 5, connate in an entire or emarginate very short lip-

Petals exserted, usually subequal; standard orbicular, auriculate at

wings falcate, obovate, adnate to keel; keel much incurved, o

beaked, beak straight. Stamens 10; vexillary filament

thickened or -; appended at base, the others connate in a shea

anthers uniform. Ovary subessible, many-ovuled; style thic

upwards and bearded longitudinally down the front, or fin

and bearded round the terminal stigma. Fruit a flat

oblong recurved pod, continuous within. Seeds thick or

hilum short with slender funicle or elongated and covered by

thickened subpersistent apex of funicle.

Style clavate, thickened upwards, bearded along the inner face; Pod

oblong recurved, 2-4-seeded :

Pods tapering to the apex; seeds with long axis parallel to the s tu

Pods abruptly truncated at apex; seeds with long axis across the V

Lablahw. /H 1/10 1/n

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. ..........................................................

.................................
   In all the provinces, cultivated.
   *Beng.* Shim.

   In all the provinces, cultivated.
   *Beng.* Shim.

   Behar; Chota Nagpur.
   A subereect or trailing or twining annual.
   *Hind.* Kulti; *Beng.* Kurti-kalai; *Santal.* Horec'.

° 06. DOLICHOS SUBCARNOSUS W. & A.; F. B. I. ii. 211.
   Chittagong, cultivated.
   A climber.


Twining herbs, with large tuberous roots; *leaves* pinnately 3-foliolate; leaflets eglandular; stipules membranous, peltately
Pels subulate. *Flowers* rather showy, fasciculately race-
*f of Awards the apex of axillary peduncles, nodes of rachis
bracts small caducous; bracteoles larger, subpersistent.

^pah 5, connate in a campanulate tube; lowest lobe shorter
^poss lateral, upper 2 connate, emarginate or bifid, all shorter than
^e1 Petals exserted; standard suborbicular; wings obliquely
obovate; keel incurved at apex, obtuse. *Stamens* 10; vexillary
filar free below and above, m the middle connate with the
rest as a tube; anthers uniform. *Ovary* subtipitate, many-
silk-ckened above ovary, laterally compressed, 0
^verse 0 \ terminal globose stigma. *Fruit* a 4-angled pod with each
\ distinctly winged, septate between the seeds. *Seeds* trans-

507.

PSOPHOCARPUS TETRACTONOLOBUS 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; 8th Pules setaceous or striate; stipels subulate. *Flovers* solitary
or paired on the rachis of an axillary raceme; bracts narrow; bracteoles minute. *Sepals 5, connate in a cylindric tube, gibbous at the base behind; limb obliquely truncate, teeth obsolete. Petals exserted, 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 subsessile, many-ovuled; style erect and filiform below, dilated above the middle, the top subulate inflexed, beardless; stigma terminal capitate. Fruit a linear falcate pod, compressed, continuous within, torulose opposite the seeds. Seeds subglobose; strophiole 1.*

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 first half their length. Petals little exserted; standard suborbicular 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 subsessile, 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.


W. Bengal, cultivated occasionally.


239. Teramnus Sw.

Twining herbs with slender sterna; 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,
LEGUMINOS.V.

Sepals 5, connate in a small campanulate tube; lobes equal or the 2 upper shorter and distinct, or the 2 upper innate. Petals little exserted; standard obovate, narrowed at base, not appended; wings narrow, adnate to keel; keel shorter than wings, almost straight, obtuse. Stamens 10, connate in a tube; anthers alternately perfect and very small sterile. Ovary sessile, many-ovuled; style short, thick, curved, beardless; stigma terminal, capitate. Fruit a linear flattish pod, septate within, 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.

Leaflets acuminate'or' acute; racemes congested, sessile; calyx-teeth shorter than tube.


In all the provinces.

A slender twining species.

TERAMNUS DEBILIS Pratm. T. labialis var. mollis 1. B. I. 184.

Glycine delilis F. I. iii. 318.

C. and E. Bengal.

A slender twining species.

Beng. Mashani.

TERAMNUS FLEXILIS Benth.; F. B. I-ii-185.

Sundribs; Chittagong.

A rather robust twining species.

Canavalia DC.

Large twining or prostrate herbs; leaves pinnately S-foliate, glandular; stipules small, sometimes wart-like or obsolete; Pels subulate. Flowers showy, in elongated peduncled bijoublij fascicled on a nodose rachis; bracts minute; ovaries 5, connate in a tube; limb oblique, 2-hppeci;

Hp projecting entire or emarginate, lower shortly ovate, much smaller. Petals much exserted; standard large, suborbiculart reflexed; wings narrow, free from the wider obtuse or
BENGAL PLANTS.

Canavalia

In most of the provinces.

A littoral species, occurring along the coast.

Sundribuns and offshore; a very common climber along creeks and rivers.

Pods 4-6-seeded, 5-13 cm long. Flowers rather numerous, 1.5-2 cm wide.

Seeds oblong, 1.5-2 cm long. Hilum lineal-oblong.
As long as tube, lateral lobes shorter, lowest rather longer than upper lip. Petals somewhat exerted; standard orbicular or petaloid, reflexed, auriculate at the base; wings obovate or oblong, from the somewhat shorter, incurved, beaked or obtuse keel. Stamens 10; vexillary filament free below, connate from the middle of the rest, its anther perfect; anthers of the sheath uniform or almost entirely perfect and much shorter sterile. Ovary subsessile, or more-ovuled; style incurved, beardless; stigma terminal, capitate. Fruit a linear or oblong pod, few-seeded, flattened or gled along the upper suture, occluded but not septate between seeds. Seeds somewhat compressed; hilum short or linear; phiole oblong.

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; petioles glandular, sometimes lobed palmately; stipules herbaceous, basifixed, occasionally peltately attached; stipels subulate.

Petals purplish or blue, densely fasciculately racemose on long peduncles, or subpaniculate near ends of branches; rachis odose, nodes sometimes produced; bracts small, deciduous; raciole 4 small subpersistent, or minute and caducous. Sepals connate in a campanulate tube; teeth short or long, the 2 upper in an entire or 2-lobed lip. Petals distinctly exerted; dard obovate or suborbicular, auriculate at base; wings narrow, or falcate, about as long as and adnate in the middle to the straightly curved keel. Stamens 10; vexillary filament free at the base, connate in the middle with the rest, rarely quite free; uniform. Ovary subsessile, many-ovuled; style filiform above, beardless; stigma terminal capitate. Fruit flatish Pod, continuous or occluded or septate. Seed oblong or transversely oblong; hilum shortly oblong; phiole small, sometimes obsolete.

 Produced when the plant is leafless; leaflets enfeebled; pod wide somewhat constricted along the sutures between the seeds.
BENGAL PLANTS.

Calyx silky; teeth subobtuse, shorter than tube; bracts shorter than tube; pods bristly.

Calyx subglabrous; teeth acute, as long as tube; bracts shorter than tube; pods bristly.

"Flowers produced along with the leaves; leaflets more or less oblong; flowers *5 in. long; sutures of subcy.

Leaflets shallow-lobed; flowers *5 in. long; sutures of subcy.

Leaflets deeply lobed, larger; flowers *5 in. long; sutures distinctly thickened, pods broader than thick.

518. Pueraria tuberosa DC.; F. B. I. ii. 197; E. D. P.

Hedysarum tubero&um F. I. iii. 363.

Chota Nagpur; Orissa.

A shrubby climber, with a large tuberous root and Santal. Tirra, patral khonda; Beng. Shinna.


Chittagong.

A shrubby climber.

520. Pueraria phaseoloides Benth.; F. B. I. ii. 197; P. phaseoloides

Dolichoplia phaseoloides 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.


Prostrate or twining herbs; leaves 3-foliolate; stipules deciduous; stipels subulate. Flowers in axillary pe racemes, paired or fascicled on the swollen nodes of the rac bracts setaceous; bracteoles minute. Sepals 5, connate in a tube; teeth lanceolate or linear, the 2 upper connate in an en lip; buds acuminate. Petals not much exserted, about equal length; standard ovate or orbicular, faintly auriculate at seps wings narrow, adnate to the obtuse almost straight keel. Sini

10; vexillary filament free, connate in the middle with the res j anthers uniform. Ovary subsessile, many-ovuled; style long, filiform, beardless; stigma terminal, capitulate. Fruit a line* usually recurved, flattened pod, occluded or subseptate bet wee the seeds. Seeds somewhat compressed; strophiole 0.
LEGUMINOSM.

Glycine
tenuijtora F. I. iiL 319.
Western Behar.
A slender twining herb.

Glynice

244. Grona Lour.
Twining herbs; leaves 1-foliolate; stipules caduicus; stipels
Wlate. *Flovers in axillary or subterminal racemes, 2-3 togeteq
*W the slightly BwoUen nod es of the rachis. Sepals 5, connatein
*ort campanulate tube; teeth longer than tub b, h, c, 
* or less united at the base. Petals exserted; s^andard 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 subseissile) many-ovuied; style filiform, beardless ) stigma-
te-nimal capitate. *Fruit a linear compressed or somewhat turgrf
**. occluded between the seeds. Seeds orbicular; hilum small,
sophi, distinct.

245. Erythrina Linn.
Tre es, rarely undershrubs, with prickly bran-
na<8ly 3-foliolate, petioles sometimes prickly;
stil PeU gland-lke. *Flowers red, rarely white, in dens^ >if
^ m es that are axillary but appear before ^
maU P**ea or fascicled on the rachis; bracts smatt,
« 0- SepaU 5, connate in a spathaceous ^eath spM to the-
ed b(§ind with minutely toothed tip, or in a ^ ^ ^ J ^ ov
too&less calyx. Petals exserted, very unequal; standardjang
• erect or spreading, sessile or long-clawed base not ^ n c
wing* very short; keel short, its petals partly connatej^ ^
Stijhen 10; vexillary filament free or connate at p
^ the others connate to their middle; ^ e / s T ^ ,
Gqvary
;Vtate,many-ovuied; style incurved, subulate at apex'
inal capitale. *Fruit a stipitate, hnear-falcate po
at ^ th extremities, seed-bearing throughout or at apex
v2d
stricted or sinuate between the seeds; dehiscence folliculasta
out the dorsal suture or at the apex only. Seeds ovotf;
lateral oblong; strophiole 0.

Calyx spathaceous oblique, not at all 2-lipped, finally split to to*
along the back; tall trees:—

Calyx 5-oleft at the tip; keel-petals free; pod 6-8-seeded, dis*-
torulose ...........................................
Calyx entire at the tip; keel-petals connate; pod 2-3-seeded, h*
torulose ...........................................

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 sm
limb of standard 3-4 times as long as broad; pod turgid
suberosa var. subio

Leaflets twice as long as broad, glabrous beneath, their ma-
entire; limb of standard only as long as broad; pod torulose
oiitifolia.

Herb with annual twigs from a woody rootstock; leaflets intire,
as broad ...........................................

ERYTHRINA INDICA Lamk; F. I. iii. 249; F. B. I. 18y;
E. D. E. 342.

Sundriabns, sea-face, wild; elsewhere common but always
planted.

An jumed tree, with blackish prickles. Bevy-
mandar; Hind. Mandara; Santal. Marar bahal.

ERYTHRINA STRICTA Roxb.; F. I. iii. 251; F. B. I. 18y;
E. D. E. 354.

Orissa, Khurda; Chittagong.

An armed tree, with pale prickles. Uagh. Katheik.

ERYTHRINA SUBEROSA Roxb. var. SUBLOBATA Bak.; F. B-
ii. 190; E. D. E. 356. E. sublobata F. I. iii. 254.

Behar; Chota Nagpur; Orissa.

A tree with thic
corky bark. Vriya Paldua.

ERYTHRINA OVALIFOLIA Roxb.; F. I. iii. 254; F. B. I. 18y;
C. Bengal.

ERYTHRINA RESUPINATA Roxb.; F. I. iii. 257; F. B. i
ii. 18y).
Chota Nagpur, Parasnath.

A dwarf species, the racemes and annual leafy shoots springing directly from a stout rootstock.

246. Mucuna Adans.

**Pean** al or **annua** * S* twining shrubs or herbs; **leaves** \( \tilde{\text{f}} \) * axilate*; stipules deciduous; stipels subulate, rarely 0. **Flowers** usually large \( \tilde{\text{g}} \) * large* purple red or greenish, fasciculately racemous on \( \tilde{\text{h}} \) * axial* peduncles, or occasionally subcymose, on a \( \tilde{\text{i}} \) * long* bracts deciduous, large or small; bracteoles small, later \( \tilde{\text{i}} \) * short* **Petal** 2 connate in an entire lip. **Petals** much exceeding the **wings**, auriculate at long \( \tilde{\text{a}} \) * wings* oblong or ovate, usually adiate to keel; keel as **Stamens** 10; **vexillum** \( \tilde{\text{a}} \) * vexillum* T filament free, the others connate in a often \( \tilde{\text{c}} \) * keel* anthers alternately longer basifixed, and shorter \( \tilde{\text{o}} \) * keel* **Ovary** sessile, villous, few- or many- \( \tilde{\text{p}} \) * Ovary* leathery, ovate oblong or linear pod, usually \( \tilde{\text{r}} \) * Ovary* beset with \( \tilde{\text{w}} \) * Ovary* hairs; externally variously winged or plaited or **Wart** \( \tilde{\text{x}} \) * Wart* Ptate or occluded. **Seeds** orbicular with long \( \tilde{\text{y}} \) * long* or transversely oblong with short hilum; strophiole 0.
Tippera; Chittagong.
A large woody climber.

Sundribuns.
An extensive woody climber, confined to forests.

In all the provinces; common both on forests and in village jungles.
An annual climber with slender stems.

Occasionally cultivated, especially in the western parts.
An annual climber with slender stems. In plants the racemes are often short and sometimes only 1-2 flowers being produce.
Alkushi.

533. MUCUNA NIVEA DC.; F. B. I. ii. 188. *Carpopogon niveum* F. I. iii. 288.
Occasionally cultivated.
An annual climber with slender stems. *utilis* are probably only varieties of the same
Beng. Khamach.

Trees or large woody twiners; leaves pinnately 3-foliola large; stipules small, caducous; stipels subulate, showy, densely fascicled in axillary or terminal racemes or p. *Sejyals* 5, connate in a wide campanulate tube; teeth short, the two upper connate in a broad entire or emarginate Petals much exerted; standard ovate, acute, recurved appendaged at base; wings falcate, adnate to the much-inv. acute keel, which equals the standard in length.
Vexillar filament free, filiform, the rest connate; anthers urn long. Ovary sessile or shortly stipitate, 2-ovuled; style long, inc. Lni beardless; stigma terminal, truncate or capitulate. Fruit a
Spaltholobus]

Leguminosae.

Spatholobus Hassk.

Leaves ovate, distinctly acuminate; stipules small; flowers small, in large terminal panicles extend-own the upper leaf-axils, densely fascicled on the swollen nodes of the individual racemes; bracts lanceolate; bracteoles linear, oblong, free; keel obtuse, straight. Petals exserted, sub-obliquely oblong, free; anthers sessile or stipitate, 2-ovuled; style subulate, style short beardless. Seed obovate, somewhat compressed; hilum small; strophiole 0.

BENGAL PLANTS.

Behar; Chota Nagpur; W. Bengal; Tirhut; A very heavy wood} climber. Hind. Maula; Santal. Chhitul lar.

537. Spatholobus Listeri Prain.
Chittagong. A large climber.

249. Clitoria Linn.

Herbs or shrubs, twining or erect; leaves pinnately 3-7-stipules persistent striate; stipels small subulate, some flowers very showy, blue, white, red or purple, axillary so paired, or in pairs on the rachis of axillary racemes; bracteoles like, persistent, paired, the lower opposite free, the upper in one; bracteoles usually large, striate, persistent. connate in a membranous tube; the lowest tooth narrow two upper subconnate in a lip. Petals much exsertea, large erect emarginate narrowed to the base, without petals 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 Fruit a linear compressed pod somewhat thickened a upper or bottom sutures, occluded or continuous without subglobose or compressed; strophiole 0.

In gardens everywhere; also often self-sown jungles, and by waysides. A slender climber with large cobalt blue, or, less pure white flowers. Vernac. Aparajita-

250. Sesbania Pers.

Herbs, shrubs, or small, soft-wooded trees, sonletinies leaves even-pinnate, leaflets many-jugate, entire; stipes caducous; stipels minute or 0. Flowers in lax axillary race with slender pedicels; bracts and bracteoles setaceous, caducous 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
keel incurved, obtuse, or bluntly acuminate, long-clawed. 

Stamens 5 with vigillary filament free, jointed at the base with the 

ovules occasionally alternately slightly longer or shorter. Varying in shape, many-ovuled; style incurved, 

inflor. subindependent, subterete, 4-angled or 4-winged, sometimes 

Sepals uniform, occasionally alternately slightly longer 

subtended »septate within between the numerous seeds. Seeds 

ersely oblong or quadrate; strophiole 0.

Flow PoStr Small to medium t\$\text{75} in. or less t\$ buas slight—

s twisted, pendulous; flowers -5 in. or more long; stems and 

rachises unarmed: —

Stems woody; flowers *6 in.; pods 6 in. long, sutures undu-

late and valves widely depressed between the seeds; small trees: —

flowers uniformly yellow .................. agyi\text{t}i\text{a}ca. 

blowers more or less coloured: —

Standard externally dotted with purple ...(egy\text{t}i\text{a}ca var. picta. 

Standard externally dark maroon or purple 

agyi\text{t}i\text{a}ca var. bicolor.

\text{P}ith-like; flowers '15 in.; pods 10-12 in. long, 

\text{S}traight, valves slightly abruptly depressed between the 

\text{P}ods with tree-like stems ................. paludom. 

\text{F}lows not twisted, erect or ascending (except sometimes in S. cannabina); 

\text{F}lows 4-8 in. or less long; annuals with woody stems: —

Stems very tall and rachises of leaves smooth; pods with straight 

sutures and valves not depressed, oftest 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 

subtoruloae, very erect, 3-4 in. long ......................... nigbinota. 

\text{F}lowS large (a in. long) buds irrately recurved; considerable trees 

white or reddish flowers ......................... (jrandijjom.

589. SESBANIA EGYPTIACA Pers.; F. B. I. ii. 114 partly. 

Cultivated occasionally. 

A small tree. 

Var. PICTA Prain. S. cegy\text{t}i\text{a}ca F. B. I. ii. H4 partly. 

Cultivated fairly commonly. 

A small tree.


- Generally cultivated and often spontaneous.


- Central and Eastern Bengal, in jheels; common.

541. SESBANIA CANNABINA Pers. S. aculeata var. can-

F. B. I. ii. 115 partly. Msclynomene 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. JESCMI

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 var.

ii. 115 partly. Msclynomene uliginosa F. I. 

ulag

E. D. S. 115 partly.

544. SESBANIA GRANDIFLORA Pers.; F. 13. X. ii- 

S. 1186. Mschynomene grandiflora F. I. 

Generally planted.


251. Tephrosia Pers.

Herbs or undershrubs, rarely shrubs; leaves odd-pinnate; 
lets numerous, rarely 3 or 1, obliquely parallel-veined from 
midrib, usually silky beneath; stipules setaceous, someti
spinescent, or, if broader, striate; stipes 0. Flowers paired 
fascicled in the axils of leaves or on terminal leaf-opposed or 
often axillary racemes, occasionally both axillary and racemos 
racemes with bracts consisting of connate stipules; bracteolej 
Sepals 5, connate in a campanulate tube; teeth subequal or W> 
upper slightly conuate or the lowest occasionally longer than t^
LEG ninOSJE.

**Tephrosia**, rest. P. 

... ; standard rounded; wings obliquely obovate incurved obtuse keel. Stamens 10; below, at first connate in the middle with g^h usually free; anthers uniform. Ovary 2-ovuled; style incurved or bent, flattened, bearded or not; stigma terminal capitate, or obscurely septate within. Fruit a linear pod, somewhat compressed, sometimes small, usually 0.

Calyx-teeth deltoid longer than the tube; shrubs; pods densely clothed Passed brown hairs, slightly recurved; leaflets acute, 9-12 pairs

Candida.

Stems' man cow cus Pidate, as long as tube; herbs; leaflets obtuse:—

Pods de Selv Cloth with long g persistent, spreading silky hairs:—

Poda Smuch recurved, ed, covered with white hairs................ villosa.

Pods ightly recurved, covered with brown hairs.... Hookeriana.

Stems nr stamenufe; leaflets 4-5 pairs; pods finely downy, slightly downy with short hairs or glabrescent, slightly recurved purpurea.

...........pumila.

545. TEPHROSIA CANDIDA DC.; F. B. I. ii. 111. Bobinia Candida

Bengal; Chittagong: elsewhere often planted.

546. TEPHROSIA VILLOSA Pers.; F. B. I. ii. 113; E. V. T. 280.

Galega villosa F. I. iii. 385.

Behar; W. Bengal.


Bengal; E. Bengal.

548. TEPHROSIA PURPUREA Pers.; F. B. I. ii. 112; E. D. T. 270.

Galega 2 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 waysides.

niuch-branched, very variable perennial herb; steins 1-2 feet high. Vernac. Sai-phonka, ban-nil.
Behar; Chota Nagpur: in fields.
A diffuse perennial weed.

252. Hilleitia W. & A.

Large climbing shrubs or occasionally trees; *leaves* odd-pinnate or pinnate; *stipules* usually small; *leaflets* opposite; *stipels* subulate, sometimes 0. *Flowers* fascicled, rarely scattered, on *rachis* of axillary or terminal simple racemes or panicles; *petals* small, caducous; *bracteoles* caducous. *Sepals* 5, connate in a *campanulate* tube; *teeth* usually short or nearly obsolete. *Petal* much exserted; *standard* obovate or orbicular, spreading or turned toward the keel, sometimes connate by their tips; keel incurved, obtuse.

*Stamen.* 10; *vexillary filament* sometimes quite free, sometimes connate in the middle with the rest; *anthers* uniform, versatile.

*Ovary* 5; *stigma* terminal, capitate. *Fruit* a linear lanceolate or oblong-compressed or thickened, coriaceous or woody pod, usually *tartly dehiscent.* *Seed,* orbicular or reniform; hilum small.

*Leaflets* 13–15, obscurely silky, glabrous; *standard* subsessile; *petal* large; *standard* velvety, subulate.

*Leaflets* 7–9, *flowers* pedicellate; *pod* flattened; *fruit* subsessile; *seed* sessile;

Behar, Rajmahal Hills; Orissa, Khurda.
A large woody climber.

551. MILLETTIA CINEREA Benth.; F. B. I. ii. 106.
Chittagong.
A large woody climber.
LEGS.

253. Pongamia Vent.

A tree. Leaves odd-pinna, opposite; stipules small; leaflets in fascicles of 2-4 on the rachis of the flowers; bracts small, caducous; bracteoles minute, ovate or orbicular, caducous. Sepals 5, connate in a campanulate tube; teeth obsolescent; standard ovate or orbicular, obliquely oblong, slightly adnate to the claw; keel obtuse. Stamens 10; vexillary filaments free below, connate in the middle with the rest; anthers uniform, oblong. Style filiform, incurved, terminal, capitately. Fruit an obliquely oblong, compressed lomentum not winged on either side. Seed soot, thick, reniform; hilum small. Vernac. Karanj.

254. Derris Lour.

a climbing shrubs, rarely trees; leaves odd-pinna, alternate; stipules small; leaflets small; flowers in racemes or terminal racemes or small cymes; bracts small, caducous; bracteoles ovate or orbicular, obtuse. Sepals 5, connate in a campanulate tube; petals much exserted; standard and wings not auriculate at the bases; petal obliquely obtuse. Stamens 10; vexillary filament free below, connate in the middle with the rest.
the middle with the rest, rarely quite free; anthers uniform satile. Ovary sessile or shortly stipitate; ovules 2 or more; By filiform, incurved, beardless; stigma terminal, capitate. Fr obliquely orbicular or oblong indehiscent compressed 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 nodes neither swollen nor produced into stalks; pods upper suture, sutures sinuate between the seeds.

Vexillary stamen united with the others at least in the centre or sheath; flowers fascicled on tumid nodes that are sometimes 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.

Leaflets oblique at base; pods glabrous; a tree.

Pods suborbicular, obtuse, glabrous; seeds solitary.

Pods winged along both sutures, glabrous.

Standard with 2 thickened callosities at the base; vexillary stamen united with the others:

Leaves and petals glabrous; racemes much shorter than leaves.

Leaves and petals pubescent; racemes nearly as long as leaves.

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.

Balbergia scandens F. I. iii. 232.
In all the provinces.
A slender woody climber, with excentric stems.

557. DERRIS ROBUSTA Benth.; F. B. I. ii. 241; E. V. V.

Dalbergia Krowee F. I. iii. 229.
Chittagong.

ooS. DEBRIS oiiGwosi Benth.; F. B I. ii. 241. Galed"l>«

uUginosa P. I. iii. 243,
Sundribuns; Chittagong, coast; C. Bengal, banks tidal rivers.
255. Dalbergia Linn. f.

Tree, deciduous, often climbing; leaves odd-pinnate, alternate; more, rarely 3 or 1; stipules usually small, flowers small, usually numerous, in axillary or terminal cymes; bracts small, sub-ovate; sepals campanulate tube; the two upper teeth widest, petals oblong; keel obtuse. Stamens 10 the rest connate in a sheath, or 10 all connate in a sheath split above. Ovary stipitate, sessile, ovate, usually exerted; standard petals and bracteoles oblong, persistent, conspicuous; pod thickly serous opposite the solitary seed, abruptly narrowed to a stipe as long as calyx; leaflets considerably longer than broad; a

except opposite the seeds:—[p. 410]

^arnens in two lateral phalanges of 5 filaments each:—[p. 410]

^acts and bracteoles oblong, persistent, conspicuous; pod thickly serous "Poposite the solitary seed, abruptly narrowed to a stipe as long as calyx; leaflets considerably longer than broad; a

^arns and bracteoles none, or inconspicuous deciduous; podcoriaceous opposite the seeds, gradually narrowed to a stipe; leaflets not longer than broad:
Pod narrow, 4-6 times as long as broad, not veined seeds; leaflets persistently hirsute on both sides; no congested axillary panicles; a tree; bracteoles 0, twice as long as calyx.

Pod wider, only 2-3 times as long as broad, veined seeds; leaflets early glabrous on both sides; stalk only longer than calyx:

Calyx-teeth minute, deltoid; flowers in dense terminal panicles; a climber; bracteoles 0.

Calyx-teeth as long as tube; obtuse; a tree; bracteoles 0.

Stamens 9-10 in one bundle, vexillary stamen united to on sheath or absent:—[p. 409]

Leaflets many (25-41), thinly pubescent, trapezoid-oblong, small; flowers in congested sessile axillary panicles, paper, a climber.

Leaflets fewer (never more than 15), glabrous, oblong or distant, large or medium:

Leaflets 11-15; flowers in ample terminal panicles, wicate, congested corymbs at the ends of their branches, pod many times longer than calyx; a climber.

Leaflets 3-7; flowers in axillary panicles; stalk of pod as long as calyx; tall trees:

Panicles small, pedicels short; leaflets roundish, cuspidate; pods narrow, 6-8 times as long as broad.

Panicles lax, pedicels long; leaflets oblong, or oblong or retuse; pods only 2-3 times as long as broad.

*Pod uniformly thickened throughout; upper suture falcate.*

Stamens in 2 lateral phalanges of 4 or 5 each; branches spicate an erect shrub.

Stamens 10 in one bundle; unarmed; a large climber... cam e


N. Bengal; Chittagong.

A climber or erect shrub, according to circumstance:

563. DALBERGIA SERICEA G. Don.—D. hircina F. B. I. 233.


N. Bengal.

A tree.

Chota Nagpur; Behar; W.Bengal; N.Bengal; Orissa; Chittagong.
A large climbing shrub. Santal. Bir munga, nan sins; Uriya Nubari.

Behar; Chota Nagpur; W. Bengal: planted elsewhere.

566. DALBERGIA TAMARINDIFOLIA Roxb.; F. I. iii. 233; F. B. I. 
  ^ 234 ; E. D. D. 92.
Chittagong.
A climbing or, rarely, suberect shrub.

567. DALBERGIA CONFERTIFLORA Benth.; F. B. I. ii. 233.
Chittagong.
A large climber.

«& DALBERGIA BISSOO Roxb.; P. I. iii. 223; F. B. I. ii. 231,
E. D. D. 64.
In all the provinces.

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.

560. DALBERGIA SPINOSA Roxb.; F. I. iii. 233; tf. B. I. n. 238,
E. D. D. 84.
Sundribuns.
An erect, spiny shrub.

57L DALBERGIA CANDENATENSIS Prain. D. nwnesperma l'. u. i.
ii. 237 ; E. D. D. 48.
Sundribuns.
A rather extensive climber.

256. Pterocarpus Linn.

A rect timber trees; leaves odd-pinnate, alternate; leaflets * ri % papery or coriaceous, alternate; stipules small, deciduous; stiPels 0. mowers yellow, in terminal or axillary racemes, qi f*<*es; pedicels faintly or distinctly articulate; bracts small, J^duous; bracteoles 2, often caducous. Sepals 5, connate m a 7hinate or campanulate tube, somewhat incurved; teeth short, the two upper sometimes subconnate. Petals exserted; standard
orbicular or wide-ovate, not appendiculate, its margins crumple are those of the obliquely oblong wings; keel-petals similar, smaller, not adnate to wings, and not or only slightly 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 sepal then usually lateral, the centre seed-bearing and often extern reticulate, the margin forming a coriaceous or subreniform wing; septate within if more than 1-seeded. Seeds lenticel or subeniform; hilum small.

Leaves firmly coriaceous, finely pubescent beneath; pod velvety young; pedicels short:—

Leaflets oblong, obtuse .............................................. Marsupium
Leaflets ovate, acute or acuminate .................................. Ursupium
Leaves firmly papery or thinly coriaceous, glabrous; pods very spiny pubescent when young; pedicel long, slender:—

Leaves ovate-rotund, with a sudden blunt point, main nerves barely more distinct than the secondary; panicles almost in dica
only one raceme terminal; bracteoles lanceolate, .................... Pterocarpus
Leaves ovate-lanceolate, narrowly gardullly to the apex, main nerves much stronger beneath than secondary; panicles terminal, or only extending into the axils of 2-3 distal leaves; bracteoles ovate .................................................. Dafles

572. PTEROCARPUS MARSUPIUM Eoxb.; F. I. ill- 234; F. B. C. ii. 239 ; E. D. P. 170.

572/2. Var. f }. P. indicus F. B. C. ii. 238 partly not of Wi

573. PISTROCARPUS INDICUS Willd.; F. I. ill. 238; F. B. C. partly.
Planted occasionally in C. Bengal. A medium tree; native of Moluccas.

574. PTEROCARPUS DALBEKIOIDES Koxb.; F. I. iii. 236. F. B. C. i. 2 38
A tall tree. Andaman Red Wood.
257. Melilotus Linn.

Unusual biennial herbs; leaves pinnately 3-foliolate; main-nerves of stipules adnate; flowers small, white or yellow, in slender axillary* bracts minute or 0; bracteoles 0. Sepals 5, connate in a subterminal tube; teeth subequal, lanceolate. Petals deciduous, free from the floral tube; standard obovate or oblong, longer than the obtuse keel. Stamens 10; filaments filiform; anthers uniform. Ovary sessile or stipitate, style filiform, incurved; stigma small, terminal, or lobose or oblong thick-walled tardily dehiscent pod indehiscent lomentum, longer than the calyx. Seeds few or solitary; annual...


In all the provinces.

" small field-weed of the cold season. Veriuiv. Ban-methi.

Melilotus alba Lamk; F. B. I. ii. 89.

In all the provinces.

field-weed appearing in the cold season. Veriuiv*

576. Trigonella Linn.

Annual herbs; leaves pinnately 8-foliolate; main-nerves of stipules excurrent as marginal teeth; stipules adnate; flowers solitary axillary, or capitate, subumbellate on very short or elongated axillary peduncles. Sepals 5, connate in an oblong, longer than the obtuse keel. Stamens 10; filaments free or connate in the middle with the others; anthers uniform. Ovary sessile or shortly filiform, or oblong thick-walled tardily dehiscent pod indehiscent lomentum, usually an indeliscent lomentum,
less often a follicle opening by the ventral suture, rarely a pod; 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, cately recurved.

577. TRIGONELLA FCENUM-OLUSCM Linn.; F. I. iii. 389; F- * 87; E. D. T. 612.
Cultivated in the western provinces.

578. RHESKLLA COBNUULATA Linn.; F. I. iii. 389; F. V- 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* of leaflets often excurrent as marginal teeth; stipules adnate, stipels 0. Flowers small, in axillary racemes or heads, 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, subsessic* wings oblong, longer than the obtuse keel. Stamens 10; vex'W filament free, the rest connate; filaments filiform; anthers uniform. Ovary sessile or shortly stipitate, usually immy-ovd*1 largely 1-ovuled; style subulate, beardless; stigma Bubcapite*; oblique. Fruit a spirally twisted, rarely falcate, indehiscent

Seeds Sol1 Sol1, iardy (M* h\na) solitary; 
Steins suberect; a crop... 
Stems diffuse, trailing; field-weeds'C... 

lod*, A^obo1e, spu-al, muricated 

579. Mjw^O ^A Linn... p# B L ^ 90^-^M ya4/ 
A cold-weather forage crop, especially in Behar.
A subereet, muoh-branohed herb, i-2 fapt high. Luoero.
MEDICAGO LUPUUNA Linn.; F. B. I. ii. 90; E. D. M. 332.
N. Bengal.
A diffuse, finely downy, trailing weed.

Behar; N. Bengal.

260. *Arachis* Linn.

Prostrate herbs; *leaves* even-pinnate, leaflets 2-jugate; stipules 0. *Flowers* in a dense, axillary spike, sessile, 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-celled tube; lobes membranous, the lowest slender, distinct, the upper connate in a lip. *Petals* inserted with the stamens at the apex of the tube; standard suborbicular; wings oblong, keel incurved, beaked. *Stamens* 10, or less often 9, connate in a closed tube; anthers alternately longer subbasifixed, and versatile. *Ovary* sessile at the base of the calyx-fcube, laterally elongated, stipes reflexed and rigid receptacle, with a continued lomentum, subtorulose but continuous self to ripen undergi^round. *Seeds* 1-3, irregularly coyledons thick, fleshy.

ARACHIS HYPOGAEA Linn.; F. B. I. ii. 161; E. D. A. 1261.
Occasionally cultivated.


261. *Zornia* Grael.

Annual herbs; *leaves* digitately 4-foliolate or 2-foliolate; leaflets sand-dotted; stipules subfoliaceous, gland-dotted; stipels 0. *Flowers* in interrupted spikes or solitary, on terminal or axillary *tuncles*; bracts geminate, stipular, striate, larger than the true *stiles*; *bracteoles* 0. *Sepals* 5, connate in a small subhyaline *calyx*; 2 upper lobes connate in a lip, lowest lobe oblong or lanceolate, as long as the upper, 2 lateral lobes small. Petah exserted; standard suborbicular, clawed; wings obliquely oblong;
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, capitate. **Fruit** a lomentum of several small, rounded, finely keeled, 1-seeded indehiscent joints. **Seeds** subreniform; strophiole 0.

583. **Zornia Diphylla** Pers.; **F. B. I.** ii. 147; **E. D. A.** 255.

**Hedysarum diphyllum** F.I. iii. 353.

Behar; Chota Nagpur; W. Bengal. **Sania! Tandi J P.**

262. **Alhagi Desv.**

Spiny shrubs; **leaves** simple, small, entire; stipules free, minute; bracteoles 0. **Sepals** 5, connate in a campanulate tube; teeth short, subequal. **Petals** exserted; standard obovate, clawed; wings subfalcate, free; keel incurved, obtuse. **Ovary** sessile, many-ovuled; style filiform, incurved, bearded; stigma terminal, capititate. **Fruit** a linear, thickish, indehiscent lomentum, constricted and doubly septate between the seeds, not jointed. **Seeds** reniform; strophiole 0.

584. **Alhagi Camklorum** Fisch. **A. maurorum** F. B. I. 255.

**Hedysarum Alhagi** F. I. iii. 344.

Behar; Gy*a.

A low, pungently spiny shrub. **Hind. Javlsd. 255.**

263. **Lespedeza Michx.**

Herbs or shrubs, usually softly silky; **leaves** pinnately 5-foliolate, rarely 1-foliolate, leaflets entire; stipules free, small; stipules 0. **Flowers** numerous, in axillary fascicles or racemes or in terminal panicles; bracts small; bracteoles 2 at apex of pedicels. **Sepals** 5; connate in a campanulate tube; lobes subequal or the 2 upper ones slightly connate. **Petals** exserted; standard obovate or orbiculate, narrowed to a claw; wings falcate, free or faintly adnate to the keel. **Stamens** 10; vexillary filament free, the rest connate; anthers uniform. **Ovary** sessile or stipitate, 1-ovuled; style filiform, incurved, obtuse or beaked keel. **Seeds** reniform; strophiole 0.
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.

Species or undershrubs; leaves even-pinnate, the rachis ending in a bristle, rarely with a terminal leaflet; leaflets small, sensiti- pules persistent, membranous or scarious; stipels 0. Stamine in axillary, usually unilateral, racemes; bracts and bracte- es scarious or membranous, persistent. Sepals 5, connate in a 4- or 5-lobed calyx; upper lip entire or emarginate, lower entire or short- ly 3-lobed. Petals exerted; standard suborbicular, short- cawed; wings oblique, oblong, rarely obovate; keel incurved, Bundle connate in 2 lateral bundles of 5 each, the at first slightly adnate in front; anthers uniform. Ovary sessile or stipitate, many-ovuled; style filiform, incurved; stigma ei-minal, capitate. Fruit a lomentum of few or numerous, attened or turgid 1-seeded joints, folded together inside the Alyx rigid, with close, parallel, simple veins:

Flowers in pairs in the axils of the leaves; leaves and calyx distinctly sensitiva.

Flowers in pairs in the axils of the leaves; leaves and calyx distinctly

Smithia Sensitiva Ait.; F. I. iii. 342; F. B. I. ii. 148;

E. B. s. 2259.

In all the provinces.


Smithia Geminiflora Roth var. Conferta Bak.; F. B. I. ii. 149.

Behar; Chota Nagpur.

A weed of waste places.
588. SMITHIA CILIATA Royle; F. B. I. ii. 150.

Chota Nagpur, Parasnath.

An annual herb in grassy places.

589. SMITHIA GRANDIS Benth.; F. B. I. ii. 151.

N. Bengal, Duars.

A tall herb in grassy places.

265. /Eschynomene Linn.

Erect undershrubs or shrubs; leaves odd-pinnate; numerous, sensitive, linear, close-set; stipules setaceous or ceolate; stipels 0. Flowers in axillary, rarely terminal, some times branched racemes; bracts usually stipule-like; teoles adpressed to calyx. Sepals 5, connate in a deeply 2-lobed calyx; upper lip entire, lower entire or shortly 3-lobed. Deciduous; standard orbicular, short-clawed; wings obovate or oblong; keel obovate, nearly straight, or narrow incurved. Stamens 10, connate in two lateral bundles of 5 each; anthers uniform. Ovary stipitate, 2-many-ovuled; style beardless; stigma terminal, capitate. Fruit a linear, long-staminate lomentum, with 2-8 flattened, 1-seeded, separating 3 wings. Seeds subreniform, compressed; strophiole 0.

Stems slender, much branched; peduncles viscid; calyx and small, glabrous; pods smooth or papillose.

Stems stout, slightly branched, or simple; peduncles not viscid; and larger corolla hispid; pods echinulate.

590. /EschYNOMENE INDICA Linn.; F. B. I. ii. 151; E. D.-

Hedyaarum Neli-Tali F. I. iii. 365.

In ditches and jheels, general.

An annual undershrub with many slender branches.

Being. Bhath-sola.

591. /EsCHYNOMBNK ASPERA Linn.; F. B. I. ii. 152; E. D.-

Smithia Uaspera F. I. m. 343. Hedysarum Ugenan F. I. iii. 365.

In ditches and jheels, general.

A tall, erect shrub with few branches. Beng. Sola.

266. Eleiotis DC.

An annual herb; leaves 1-foliolate, but with occasionally a pair of minute lateral leafleto added; stipules short, striate; stipules...
wider the reniform leaflet subulate, M « « w widly terminal or axillary racemes; bracts large, striate, \( \text{\_\_\_}\) Wteoles minute or 0. S\^\text{\_\_\_}\) 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\^\text{\_\_\_}\) ry subsessile, 1-ovuled; style M \( \text{\_\_\_}\) \( \text{\_\_\_}\) wflexed above, thickened below; stigma terminal, capitate, a compressed, dimidiate, indehiscent, l,seeded, membranous,\_e. ticulate lomentum; dorsal margin straight. Seed transverse oblong, subrenifonn ; strophiole 0.

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 laiy \( \text{\_\_\_}\) connate in a very short tube; 2 upper teeth short, 3to\^\text{\_\_\_}\) setaceous. Petals smaH ; standard orbicular or obova,te, nai\^\text{\_\_\_}\) 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 stlipitate, « nan\^\text{\_\_\_}\) ovuled; style filiform, inflexed ; stigma terminal, capital. 

- lomentum of 2-6 small, turgid, 1-M\( \text{\_\_\_}\)dually more or less folded together within the calyx, ^ "o j; lately continuous and exerted. Seed, orbicular or subglobeose,
BENGAL PLANTS.

420

• Stems erect; leaflets large:—[p. 419] Leaflets cordate-ovate, often clouded; heads short, bracts ovate, ciliate, persistent; lower calyx-teeth of pod glabrous ........................................ W'd's long, ^

Leaflets ovate or oblong, not cordate, green; bracts cuspidate, pubescent, deciduous; calyx-teeth Joints of pod opaque, dark, pubescent; heads la^, headed .

dense, cylindrical; elongated; joints alopecuroides.

Joints of pod shining, pale, quite glabrous; heads denS6.

593. URARIA PICTA Desv.; F. B. I. ii. 155; E. D. 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.


Behar; Chota Nagpnr; E. Bengal.
An erect herb or undershrub.


Chota Nagpur; Chittagong.
An erect, branching undershrub.

598. URARIA NEGLECTA Prain. 77. lagopus F. B. I. ii. 156 Par not of DC.

N. Bengal, Duars.
A short, erect herb.

268. Lourea Neck.

Herbs, erect or prostrate; leaves 1-3-foliolate, leaflets usu* broader than long; stipules free, striate or subulate; stip
Desmodium.]  
LEGUMINOSÆ.

subulate. *W. short; standard obovate or obcordate, claw

Ovary 2- or more-ovuled, sessile or f. / ± / t

Ovary 2- or more-ovuled, sessile or f. / ± / t

Stamen, Jarius filament free, the others connate

** on». Ovary 2- or more-ovuled, sessile or f. / ± / t

Subulate, inflected; stigma wide-capitate compressed;

Amentum of 2 or more 1-seeded, indehiscent, F. orbicular

Subglostose; strophiole 0.

599. LOUREA VESPBRTILIONIS Desv.; F. B. l. u. w

Waste places.

Some times planted; often An erect, little-branched herb.

269. Ouge maBenth.

A tree; leaf, pinnately 3-foliolate; f. V r. in leaf.

Stipules dry, usually Aviate,

Petioles much exserted; standard.

*rt-cla* ed; wings Obliquely oblong, *filaitent* tese, somewhat incurved keel. Stamen* 10:

the rest connate; anthers uniform. Ova^ j

a. an elongated, linear, flat, smooth pod o. . .

Harly dakiscent joints. 5««h oampressed,
BENGAL PLANTS.

Stipels sub lanceolate, long and simple or paniculate terminal, rarely solitary in a row with paired pedicels, bracteoles, bracts large, persistent, a woody shrub, stem diffuse, prostrate, 2-6 in small lax racemes, pods with straight or reflexed suture, leaflets oblong or obovate, lower petioles nearly half that length, leaflets obovate or subulate at apex, flower, all axillary, 3 axillary, ovules 10, style incurved, stigma exserted.

Leaves opposite, short, oval to oblong, base narrowed, rarely cordate, commonly with paired pedicels, bracteoles, bracts large, persistent, a woody shrub.
Bracts small, simple, deciduous:—[p. 422]

Flowers in dense, short-peduncled, axillary umbels; woody shrubs:

Brandies terete; joints of pod large, longer than broad umhellatum.

Branches angular; joints of pod small, as broad as long:—

Pods silky.............................................. Cephalotes.

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.............. polyyearpum.

Stems clothed with spreading hairs

polycarpum var. trichocaoulon.

Joints of pod 4 times as long as broad, each joint indehiscent luxiforum.

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. mnculata.

Racemes dense; pods densely pubescent; leaflets obscurely repand.......................... rirgatum.

Leaflets coriaceous, as broad as long, ovate, subobtuse, repand, densely persistently scabrous; racemes dense; pods densely Pubescent ................................................. Uaifolium.

Petioles broadly Avinged:—

Pods hairy throughout, narrow.......................... triqnetmn.

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
BENGAL PLANTS.

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.

End-leaflet twice as long as broad; flowers larger

Pod dejectiously, loosely pubescent; shrubs 8-10 feet high. . . . gyroides.

601. DESMODIUM TRIFLORUM DC.; F. B. I. ii. 173. D. parvi


In all the provinces.
A common prostrate weed. Stuitai. Tuiuii ciiaiom aift*


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. I. ii. 169; E. D. D. &


Chota Nagpur; Behar; W. Bengal; C. Bengal.
A prostrate, diffuse, ctespitose herb.

605. DESMODIUM 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. DESMODIUM UMBELLATUM DC.; F. Jj. I. ii. 161. Hedyam

arboreum F. I. iii. 860.

Sundribuns.
A sea-coast shrub or small tree, reaching 20 feet.


Hedysarum Cephalotea F. I. iii. 360.
Chota Nagpur; Bchar; C.Bengal; E. Ucngal.

607/2. Var. CONOBSTA Prain. Hedysarum nmheUatum F. r

iii. 360, not of Linn.
Chota Nagpur; Chittagong.
A shrub.


615. DKSMODIUM PSRUDOTRIQUBTRUM DC. /\.
163 partly, not of DC. *Hedysarum triquetrum* F. I. iii. 347, not of Linn.

E. Bengal; N. Bengal.
A diffuse undershrub.

616. *DKSMODIUM* 

N. Bengal.
A diffuse trailing herb.


Chota Nagpurs.
A diffuse, trailing herb.

618. *DESMODIUM OYRANS* DC.; F. I. iii. 851.

In all the provinces but nowhere plentiful.

618/2. Var. RoYi^e we eu; p. 13. j, jj, 175.

Behar; ClpARVIFIgpiir; E. Bengal.
An underspur^w

619. *DBSMODIUM be w^eds DC.; F. B. j ^im 175 *

A large shrub, with very showy flowers.

617. Alysicarpus Neck.

Diffuse or erect annual or biennial herbs; leaves l-foliolate, rarely 3-foliolate; stipules scarious acuminate, free or connate; stipel subulate. *Flowersmaft,* in terminal, rarely axillary racemes; pedicels short, usually in pairs; bracts not or at least mostly deciduous; bracteoles 0. *Scpus* very finely connate below; lobes glumaceous or ntractive, but only the 2 upper connate near the apex. *Petals* hard, not exserted. *Standard* obovate or orbicular, narrowed to a law; wings oblique, oblong, adnate to the keel; keel slightly curved, obtuse, with a lateral *wing* dilated, dage on each side. *Umvens* 10; vexillary filament free, the other connate. *Ovary* short, stipitate, or glumaceous; *ovules* many, obtuse, or oblong; *fruit* subterete, turbid, inflated, or not between the ovate or globose or oblong truncate convex or WnP* indelisiuce, 1-seeded joint8, sul)orbicular or globose:

A shrub.
LEGUMINOSAE;

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'oliiit.

Pods much longer than first joint of pod; imbricated in fruit:—
Pods sessile; calyx densely beset with long, white, cottony hairs pubcacen*.

Pods shortly pedicelled:—
Pod with 4-cornered joints, transversely plicate; calyx pubescent and ciliated............................ tetraragonolohus.

Pods with rounded joints; calyx ciliated only:—
• Joints of pod slightly moniliform, neither veined nor rugous:—
  Leaves acute, linear or lanceolate; pods 4-6-jointed
  buplcurijutum*.

Leaves obtuse, oblong-lanceolate; pods 2-3-jointed buplcurijoliHs var. gruciU*.

Joints of pod turgid, moniliform, deeply transversely plicate:—
Stems subrect or ascending:—
Stems 1-2 feet, ascending, glabrous a* itiu im- iuac-., beneath; lucernes denso............................................ rugoxug.

Sterns 3-4 feet, suberect, persistently pubescent as are the leaves beneath; racemes elongated...rujo*U* var. Hcymeani.

• Stems dwarf, diffuse; racemes short, dense:—
  Stem...inl )k.;.:';. i.i.n;'. ih linelv piloscent
  nujom* var. styntufoUa.

Stems and leaves beneath glabrous ........................ nujom* var. minor.

ALYSICARPUS MONILIFER DC.; F. 1). i. ii. 157. Hedysarum nonilifcni,n F. I. iii. 6o.

Nagpur ; W. Bengal.
A small prostrate weed.

ALYSICARPUS HAMOSUM Edgew.; F. B. I. ii. 7. 1 edy-

Western Behar.
A small prostrate weed.
   In most of the provinces.
   A suberect weed, stems 1-3 feet high.

   In all the provinces.
   A small prostrate weed.

   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.

   In all the provinces.

625/2. Var. **ORACILIS** Bak.; F. 13. I. ii. 158.
   Behar; Chota Nagpur.
   An erect, slender weed.

62b. **ALYSICARPUS RUOOSUS** D C., 1\ JJ. 1. ii. IV».* ir.-hm'n'M*
   *buirufeurifoliuHi* 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'dysisrin*
   *stijravifolium* F. I. iii. 347.
   Behar.
   An erect weed.
   Var. **STYRACIFOLIA** Bak.; I-1. I: 7 - *«" /A/,/*/\*...........
   *f/luumceum* 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-foliolate (in Indian species); leaflets repand or toothed, gland-dotted
Indian (species); stipules large, stem-clasping, but hardly adnate to petiole; stipels 0. Flowers capitate, spicate, subracemose, or scicled, 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 exserted; standard ovate or orbicular, narrowed to a claw, sometimes uriculate 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 at 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 caryum. Seed often adnate to pericarp; strophiole 0.


In all the provinces.


273. Cyamopsis DC.

Erect herbs, beset with laterally attached hairs; leaves pinately 3-foliolate (in the Indian species); leaflets toothed; petioles small, setaceous; stipels 0. Flowers in axillary racemes; bracts caducous; bracteoles 0. Sepals 5, connate in an oblique tube; lowest tooth longest, setaceous. Petals caducous; standard obovate, sessile; wings oblong, not caduca to the erect, obtuse inappendiculate keel. Stamens 10, all in a tube; anthers uniform, connective apiculate. Ovary sessile, niany-ovuled; style incurved at tip; stigma terminal, stipitate. Fruit a linear, suberect pod, subquadrangular, acuminate, Ptate within. Seeds quadrate, compressed; strophiole 0.

628. CYAMOPSIS PSORALIOIDRS DC.: F. B. i. ii. 92; E. D. C. 2514.

Dolicilio s fahmformis F. I. iii. 316.

An annual crop.


274. Indigofera iwim.

Ferbs, undershrubs, or shrubs, with tulpressed, laterally attached hairs, occasionally with basiixed hairs intermingled; leaves odd-
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<XGAL PLANTS. .

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muricated along the ventral suture

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and pods densely clothed with short, spreading pubescence; racemes very dense, 2-6 in. long; leaflets 5-11, large, ovate; pods short, straight, 6-8-seeded; a suberect herb _hirsuta_.

Petioles and pods sparingly hirsute or grey-cunescent or glabrous:

-Kacemes 2-4-flowered, short, lax; leaflets always 5; stems inches sparsely hairy, slender; pods glabrous, 8-12-seeded; a diffuse, tufted herb......................... _glahra_.

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 . . . . . _xumatrana_.

Pods many, stout, 8-10-seeded, blunt; leaflets longer than broad; racemes as long as leaves........ _nrborca_.

**INDICOFERA**

*Western* ECHINATA Willd.; _F. I._ iii. 370; _F. B._ i. ii. 92.

- A wiry tufted annual weed. _Hind._ Motiyari, torki; Behar; Chota Nagpur.

*diffuse* branched annual weed.

**OFKiu** LINIFOLIA Retz; _F. I._ iii. 370; _F. B._ i. ii. 92; _E._ i. 134.

Behar; Chota Nagpur.

-all the provinces except Chittagong.

**INDIGOPERA CORDIFOLIA** Heyne; _F. B._ i. ii. 93; _E._ P._ i._ 121.

- Behar; Chota Nagpur.

*diffuse* branched annual weed.

**INDIGOPERA TRIFOLIATA** Linn.; _F. B._ i. ii. 96. _I._ prontaia

- _I._ iii. 373.

Chota Nagpur; W. Bengal; C. Bengal.

**INDIGOFERA GLANDULOSA** Willd.; _F. I._ iii. 372; _F. B._ T. 94; _E._ D._ i._ 131.

Western Behar, rare.

An annual slender branching weed.
BENGAL PLANTS.

634. INDIGOGERA TRITA Linn. f.; F. I. iii. 371; F. B. Chota Nagpur, rare.
A woody undershrub, 2-3 feet high.

635. INDIGOGERA ENNEAPHYLLA Linn.; F. I. ii. 94; E. D. I. 125.
Chota Nagpur; W. Bengal.

Western Behar, rare.
A diffuse weed of waste places.

637. INDIGOGERA VISCOSA Lamk.; F. I. iii. 377; F. B. C. Bengal.
A tufted branching herb.

638. INDIGOGERA HIRSUTA Linn.; F. I. iii. 376; F. B. Chota Nagpur; N. Bengal; W. Bengal.
A suberect herb, 2-4 feet high. *Hind. Chhota, sịg. I.

639. INDIGOGERA GLABRA Linn. I. fragrans F. I. pentaptylla F. B. I. ii. 95.
Chota Nagpur, very common.
An annual tufted weed.

Chota Nagpur; Behar: rare, not cultivated i>.

641. INDIGOGERA SUMATRANA Gaertn. / t. tinctoria *8.
Cultivated, chiefly Tirhut; occasionally spontan
t Tamarisk jungles and on river-banks.
A shrub with twiggy woody branches. *Hind. & Beng.

642 T.* T. argentea Indig o *.
INDIGOGERA ARTICULATA Gouan var. HOUER.
Behar; not now cultivated in our area.
A shrub with twiggy woody branches. *H* hind.
ml. Surat Indigo.

Neither "Surat," for Surfat; " Guatemala" (T. argentea) 3791.
Three otherS "*some T, *. (I. suf-
bral" has displaced i.) "E. African" or "Natal" 642.
"Natal," like "Bengal," has 8-10-seeded pods, but is a much larger plant. The other two, like "Guatemala," straight, in "West." Both the leaflets are more numerous and ovate-while their pods are not silvery-grey and are more slender.


Chota Nagpur, very common.

A shrub or small tree. Hind. Sakina, lakina; Santah Dane-huter, lili bichi.

-275. **Sophora Linn.**

**Trees**

| Leaves | opposite | odd-pinnate; leaflets subopposite or lanceolate, deciduous; stipels setaceous or 0.
| Flowers | 5 | terminal racemes or leafy panicles; bracts oblong, much exserted; standard wide-ovate or oblong, oblique; keel oblong, free; style versatile. Ovary shortly stipitate, many-ovulé; pod oblong, rarely winged, coriaceous or wood compressed, rarely winged, coriaceous or oblong. Seeds obvoid or globose; strophiole 0.

**Sophora Bakeri** Clarke. S. s». F. B. I. ii. 251.

Chota Nagpur.

A shrub.

-276. **Ormosia Jacks.**

| Leaves | odd-pinnate; leaflets opposite; stipules usually 0. Flowers in terminal panicles; bracts minute, linear. Sepals 5, connate in a short subulate tube; teeth long, the upper two shortest and widest, subobtuse, as are the usually imbricate petals. Stamens 10 or by abortion 5-9, free, all fertile or 2-5 ovulate; style versatile. Ovary subsessile, 2-many-lobed; stigma introrse, oblique. Fruit an oblong
or occasionally elongated pod, woody or coriaceous, septate within. Seed obovate or oblong, arillate, shining; funicle 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; stipules ovate-lanceolate; stipels 0. Flowers in terminal, sometimes branching corymbs; bracts like, ovate, subcordate, persistent; bracteoles rather larger, hiding the flowers. Sepals 5, obovate, panulate calyx; teeth very short, deltoid. Petals 2-4-ovuled; ovary subsessile, style slightly incurved; stigma small, terminal, obliquely oblong, much impressed, coriaceous within. Seeds 2-3, suborbicular, compressed; strop

646. DALHOUSSIEA BRACHTATA Grah.; F. 13. I. ii. 817.

Chittagong.

Suborder II. CJESALPINIE^.

Trees or shrubs, rarely herbs; leaves very rarely 1-foliolate, usually pinnate or 2-pinnate, with often leaflets; stipels 0 or very rare. Flowers irregular, rarely hermaphrodite, never capitate, very rarely spicate. 4 from union of the upper pair, separate as far as the nectariferous, the short or elongated disk, usually much below the middle distinct, imbricate, rarely valvate lobes; very rarely connate above the middle and beyond the disk in a "bottle-like" form. Petals 5 or fewer by abortion, rarely 0, the upper others variously imbricate, the lowest pair not connate. 10 or fewer by abortion, rarely numerous; free or some or all shortly or distinctly connate. Carpels free or adhering by a gynophore to the disk lining the calyx-tube. 8seef or adnexed without albumen.
LEGUMINOSJE.

Leaves simply pinnate (Isanthina) 1-foliolate:—

Calyx 5-lobed; petals 5; leaves even-pinnate.................Caesia.

Calyx complete, with 5 petals; stamens 10; petals 5:—

Stamens fixed; petals 5; leaves even-pinnate.................Caesia.

Stamens free:—

Calyx-lobes 5; petals 5; leaves even-pinnate.................Caesia.

Calyx-lobes 1-foliolate, 2-lobed; stamens 10 or 3 or 1; seeds albuminous:—

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 even-pinnate; stamens 10:—

Stamens 1-3-jugate; flowers small.........................Hardwickia.

Stamens 3-8-jugate; flowers showy.....................Saraca.

Stamens many-jugate, small...............................Tamarindus.

Stamens with a distinct main-rachis:—

Calyx-segments valvate:—

Calyx-segments imbricate, very unequal, the lowest large, boat-shaped and enclosing the others:—

Winged.........................................................Mezoneuron.

Wingless.........................1.1.1.1........................Caesalpinia.

278. Cassia Linn.

Shrubs or, less often, herbs; leaves even-pinnate; inter-foliar glands often present.

Showy, in axillary racemes or terminal panicles, axillary; bracts and bracteoles present, various.

Imbricate above, at the base very shortly connate in a
BENGAL PLANTS.

disk-lined tube. Petals 5, imbricate, spreading, subequa 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 P 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 us septate or occluded within, occasionally longitudinally externally. Seeds transverse, rarely longitudinal, horizontal vertically compressed, occasionally subtetragonal, albumino.

• 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. biciipsulavk) turgid and su terete:—
  Stamens 10, all perfect; anthers subequal; a shrub. Stamens only 7 perfect:
  Leaf-rachis furnished with glands:—[p. 437]
  Leaves with one large gland near base of common petiole:
  Leaflets 3-5-jugate, ovate-oblung; pods flattened, not impressed between the seeds:—accident.
  Leaflets 6-12-jugate, obleng-lanceolate; pods slightly turgi, 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
  Stipules narrow, caducous:—
  JStamens very unequal; pod thick, membranous, terete; seeds 2-seriate; leaflets obtuse, 3-4-jugate; a shrub [p. 437]
JStamens subequal; pod long, slender. 1-seriate; leaflets obtuse, 3-jugate; herbs with
Leaflets glaucescent beneath, fetid. 2 glands, 1 between each 1 only
Leaflets green beneath, not only
1 gland, between lowest pair of leaflets

Pod-leaf-raisins without any glands:— [P- 436] leaflets

Poa with a broad wing down the middle of each val.

Pod with no wing; leaflets medium, ovate-oblong; flowers in
racemoid corymbs; trees:

Stipules persistent, foliaceous; sutures of pod thin

Stipules caducous, minute; sutures of pods thickened

Leaflets narrow, acute; pod small, ligulate, dehiscent, low

Pallets 2-jugate, medium, ovate, membranous

Gland of petiole stipitate:—

Stamens 5

Stamens 10

Wand of petiole sessile

6*7. CASSIA FISTULA Linn.; F. I. iii. 888; F. B. L ii- 261; E. D. 756.

In all the provinces; often only in the provinces; A medium tree. Amaltas or Indian & Hind. Amaltas; Santal. Nurnio.

CASSIA NODOSA Ham.; F. I. ii. 336; F. B. L u- 

Chittagong; often planted elsewhere.

CASSIA GLAUCa Lamk; F. B. I. ii- 265; arborescens F. I. ii. 345.

Blanded.

CASSIA OCCIDENTALIS Linn.; r. &

Senna occidentals IM. In all the provinces, in waste sand. Kal-
A diffuse undershrub. &nd. Kasondi, kashonda*
In all the provinces, in waste places; *ashorn*.  


652. **Cassia auriculata** Linn.; F. B. I. ii. 262. *oen*  
In hedges and near villages in most of the provinces.  
A tall shrub. *Hind. Tarwar*.  

In C. Bengal, near villages; introduced, *not* of Linn.  
A bushy shrub.  

654. **Cassia tora** Linn.; F. B. I. ii. 263 partly; *Senna Tora* F. I. ii. 340.  
In all the provinces, very common; in waste places.  

655. **Cassia obtusifolia** Linn. C. Tora F. B. I.  
Chota Nagpur.  
An annual weed. *SantaL Chakoada arak*.  

656. **Cassia alata** Linn.; F. B. I. ii. 264; E. D. *alata* F. I. ii. 349.  
In most of the provinces, near villages; *not* of Linn.  
A shrub, with thick, rather soft, downy branches.  

657. **Cassia timorensis** DC.; F. B. I. ii. 265 ; E.  
Planted, rather generally, especially in the eastern provinces.  
A small tree.  

658. **Cassia siamea** Lamk; F. B. I. ii. 264; E.  
*Senna sumatrana* F. I. ii. 347.  
Planted in most of the provinces.  
A tree.  

659. **Cassia absus** Linn.; F. B. I. ii. 265 ; E. D. C. 728.  
Chota Nagpur; C. Bengal; Behar; Tirhut.  
An erect annual, 1-2 feet high. *Hind. Chaksu, banar-
860. **CABUHA PUMILA** Lam.; F. B. L ii. *6*--

A low prostrate undershrub. *Sanla*.

861. **JACQUINA FLATWAT** W. & A.; F. B. I. ii. 266.

A low prostrate undershrub. *Sanla*.

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279. **Bauhinia Linu.**

Flattened steins, and often with simple, cimulate tendril, 3-many-nerved, rarely entire "wlimonate", usually with amoHwate sinus, from wove or less complete union. The leaflets quite free, with the 10" large, caduous. Flower, usually showy, racemose; simple, terminal, or rarely axiUary, sometimes in spike-t! "^Cor^", A terminal panicles. *Sanla* 5, connate in a short "^Anat^" disk-lined tube with large imbricate lobes, or m a long "^Wrio" or clavate tube, with lobes imbricate or valvate or closed. Bering and then bursting valvate or opening as a sp g e. VetaU 5, slightly unequal, erect or - P ^ J ^ 7 " % clawed, unbricate, the upper petal innermost. Stanun* 1° Infert, free or nearly so, or 9 perfect, the willary flament very e: wanting, or 5 perfect, the alternate filaments sterile, ot 0° or 3) occasionally, 4, perfect, the rest sterile or wanting, 1° (the lowest) perfect; the others reduced to short, connate stAnodes; anthers venatDe, dehiscing longitudinally. OvaS S Vtate, many-ovuled, the stipe free within the calyx-tube. *"V* to the disk; style short or filiform; stiS ^erm^ "h^V", tly omique, apicate or lobea a peltate. Frmt an oblong or linear pod or lomentum, flattened, woody, continuous rarely Eluded or peltate within. Seed, orbicular or ovate, compressed,
fertile stamens more than one:

... with a very short tube; pod narrow; *' without tendrils:

Pod dehiscent; calyx-limb spatheaceous:

Flowers white, in close axillary racemes; calyx-limb subulately lobed at the tip; pod ribbed near upper suture... without tendrils:

Pod indehiscent; calyx-limb spatheaceous; flowers in lax racemes; pod flat, late of dehiscing:

Calyx-limb 5-cleft; flowers in short corymbs; pod nearly straight, closely reticulate-venulose along the centre, beaked by the persistent style... 4-5:

Calyx-limb 5-cleft; flowers minute, white, in copious terminal panicles; pod narrowly elliptic, distinctly stalked, 1-2-seeded, under 2 in. long; a shrub; tendrils and flattened stems with tense margins and a wavy undulate centre; leaves of leaves usually acute at apex:

Calyx-limb tube elongated; flowers medium; petals densely silky; large climbers with W dns; leaves deeply cleft:

Leaves 9-nerved with acute lobes, almost glabrous beneath; calyx-limb regularly 5-cleft pod indehiscent, 2-4-seeded:

Fertile stamens almost always 3, rarely 4-5:

Calyx-limb 5-cleft; flowers in short corymbs; pod nearly straight, closely reticulate-venulose along the centre, beaked by the persistent style... 4-5:

Calyx-limb 5-cleft; flowers minute, white, in copious terminal panicles; pod narrowly elliptic, distinctly stalked, 1-2-seeded, under 2 in. long; a shrub; tendrils and flattened stems with tense margins and a wavy undulate centre; leaves of leaves usually acute at apex:

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Calyx-limb tube elongated; flowers medium; petals densely silky; large climbers with W dns; leaves deeply cleft:

Leaves 9-nerved with acute lobes, almost glabrous beneath; calyx-limb regularly 5-cleft pod indehiscent, 2-4-seeded:

Fertile stamens almost always 3, rarely 4-5:

Calyx-limb 5-cleft; flowers in short corymbs; pod nearly straight, closely reticulate-venulose along the centre, beaked by the persistent style... 4-5:
63. **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.

64. **BAUHINIA TOMENTOSA** Linn.; F. I. ii. 323; F. B. I. ii. 276; E. D. B. 334.
Planted in most of the provinces.
A shrub. *Hind.* Kanchnar.

65. **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.* Gurai; *Kol.* Kaimu; *Uriya* Ambhota.

66. **BAUHINIA RUFSCENS** Lamk.; F. B. I. ii. 277.
In gardens, especially in the central parts.
A shrub.

Chota Nagpur.
A medium-sized, bushy tree. *Beng.* Karmai; *Hznt.* Amlosa; *Uriya* Gumbati; *Kol.* Laba.

Chittagong.
A large climber. *Vernac.* Nagpat.

69. **BAUHINIA RETUSA** Ham.; F. I. ii. 322; F. B. I. ii. 279; E. D. B. 330.
Chota Nagpur.
A small tree. *Kol.* Laba; *Oraon* Twar; *HtnA* Kania.

70. **BAUHINIA MACROSTACHYA** Wall.; F. B. I. ii. 281; B. D. B. 301; *J5.* *scandens* F. I. ii. 326.
Chittagong.

71. **BAUHINIA VAHLII** W. & A.; F. B. I. ii. 278; B. D. B. *Malghan;*
*B. racemosa* F. I. ii. 325.
W. Bengal; Chota Nagpur.
An extensive climber. *Beng.* Chehur; *HtnA* *Uriya* Sheoli.
BENGAL PLANTS.

672. BAUHINIA VARIGATA Linn.; F. I. ii. 319; F. I. ii. 318.
C. Candida F. I. ii. 318.
Chota Nagpur; Behar; Tirhut; N. Bengal; in other provinces often planted.
A medium-sized tree; the flowers vary in colour; those trees with pure white flowers constitute B. Candida Roxb. Beng. Rakto kanchan; Hind. Khairwal; Kol. Singya; San Uriya Borara.

673. BAUHINIA PURPUREA Linn.; F. I. ii. 320.
£. triandra F. I. ii. 320.
Chota Nagpur; Behar; N. and E. Bengal; provinces often planted.
A medium-sized tree; the flowers are of a purplish-pink and pale purple. The trees with pink flowers, which only occasionally occur, are always planted, constitute the true B. triandra Roxb., which is more commonly planted than the other pale-flowered trees constitute B. triandra Kurz.

674. BAUHINIA MONANDRA Kurz; P. B. I. ii. 285.
Occasionally planted.

280. Cynometra Linn.
Trees or large shrubs; leaves odd-pinnate; leaflets subulate, coriaceous; stipules caducous; stipels 0. short, often fascicled racemes, axillary or on oio1, ovate, dry, imbricate, at length deciduous, decreasing, bracteoles 0 or membranous and coloured. Sepals rarely 5, connate in a very short tube with subbasal oblong, imbricate, at length reflexed. Petals 5, filiform; dehiscence longitudinal. Ovary shortly stipitate, 2-ovuled, free or obliquely adnate to disk; stigma terminal, capitate or truncate. Frutit a slightly ovoid or subreniform, indehiscent lomentum, or pod, with very thick, tough, somewhat fleshy pericarp-
thick or cotyledons thick, fleshy; albumen 0; hilum ventral.

Leaf-rachis glabrous; leaf-rachis puberulous; leaves 2-jugate

Stamens in racemes with a produced axis; pedicels puberulous; leaves 2-jugate

Stamens in racemes without a central axis; pedicels puberulous; leaves 2-jugate

Cynometra cauliflora Linn.; F. J3. 1. ii. 268; E. T. C 2572.

Occasionally planted.

Cynometra ramiflora var. mimosoides J3ak.; F. B. I. ii. 267. C. ramiflora E. D. C. 2577.

Sundribuns.

Cynometra polyandra Roxb.; F. I. ii. 372; F. B. I. ii. 268; E. D. C 2574.

Vhittagong; occasionally planted elsewhere.


Hardwickia Roxb.

Tree Q. leaves even-pinnate; leaflets 1-3-jugate, coriaceous; all, caducous; stipels 0. Flowers small, in paniculate 5, sessile, minute; bracteoles under calyx scale-like. Sepals orbiculate, often 4, hardly connate round the basal disk, petaloid, much imbricate. Petals 10 or 8, alternate and shorter; anthers versatile, dehiscence longitudinal; style filiform; stigma capitate. Fruit a dry lomentum or follicle with the upper valve alone developed into a seed which fills the whole cavity of the fruit, the base then being thin and albumen 0.

Hardwickia binata Boxb.; F. I. ii. 423; F. B. I. ii. 270; E. I. H. 16.

Behar.

282. Saraca Linn.

Trees or large shrubs; leaves even-pinnate; leaflets opposite, stipules small, connate, intrapetiolar; stipels 0. Flowers in a long, disk-bearing tube; the lobes oblong, hardly deciduous; bracteoles subpersistent, coloured. Petals 0. Stamens usually 7, filaments long, filiform; anthers versatile; dehiscence longitudinal. Ovary stipitate, stipe adnate below to disk and projecting; ovules many; style long, filiform; stigma filiform; stigma lobes oblong, hardly imbricate. Fruit a flattened, oblong, firmly coriaceous or almospeckled; seeds thick, flattened or suborbicular, cornulate within. Seeds thick, flattened or suborbicular, coriaceous; testa firm; albumen 0.


Generally planted; wild in Chittagong.


283. Tamarindus Linn.

A tree; leaves even-pinnate; leaflets opposite, stipules minute, caducous; stipels 0. Flowers in condensed panicles, usually from old wood; bracts small, connate, intrapetiolar; petals 4 to 6, rarely 8-4; sepals 4, connate, ovate or deltoid, in a long, disk-bearing tube; the lobes oblong, hardly deciduous; bracteoles subpersistent, 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. Petals 3 perfect, connate in a sheath split above, with filaments short; anthers oblong, versatile; dehiscence longitudinal; staminodes a few minute bristles on the ovary. Ovary stipitate, many-ovuled; stipe adnate to disk in a narrow tube; style filiform; stigma terminal, sub truncate, oblong or linear indehiscent, incurved, thick, subcompressed, with brittle epicarp, pulpy mesocarp, and endocarp, septate within. Seeds obovate-orbicular, coniporate, testa firm; albumen 0.


Generally planted.

A tall tree. Beng. Tintuli, tinturi; Hind. Amli;
284. **Intsia** Thouars.

Trees have even-pinnate; leaflets coriaceous, opposite, few-stipules minute, intrapetioilar, deciduous, or 0; scipels 0.

Flowers * rather conspicuous, in short panicles at ends of branches; ovate, usually deciduous; bracteoles ovate, subpersistent, enclosing the bud. * Sepals 4, connate in a long disk-lined lobes slightly unequal, decussately imbricate. * Petal 1, bicular. * Stamens 3, a lowest single and a lateral pair with 2 pairs of intervening staminodes, and with 2 pairs of lateral stamens and petal; filaments filiform, small, oblong; * dehiscence longitudinal. * Ovary. 4, connate in a long disk-lined tube and produced beyond it; style long, filiform; stigma sub-fusiform.

**Intsia** is a littoral tree. **Beng.** Hinga, somdal.

285. **Acrocarpus** W. & A.

Trees have leaves twice-pinnate; pinne odd-pinnate; leaflets acuminate, herbaceous, opposite except the terminal; deciduous; stipels 0. * Flowers appearing before the dense axillary solitary, or terminal fascicled racemes; small, oblong; bracteoles small, caducous. * Sepals 5, con- a campanulate, disk-lined calyx; teeth lanceolate, as tube. * Petals 5, narrow, subequal, somewhat exserted. 5, free, exserted, straight; anthers versatile; dehiscence longitudinal. * Ovary stipitate, many-ovuled; stigma minute, terminal. * Fruit a flat, gulate pod, upper suture winged. * Seeds obovate, oblique, comprised; strophiole 0.

**Acrocarpus** is a tall tree. **Chittagong.**

A littoral tree. **Beng.** Hinga, somdal.
286. Parkinsonia Linn.

Small armed trees; *leaves* 2-pinnate with a very short *main-rachis*; *pinnae* with much flattened racinis, long-pedicelled in short, lax, axillary racemes; *bracts* spinescent; *stipules* many, small; *stipels* long-pedicelled in short, lax, axillary racemes; *bracteoles* 0. *Sepals* 5, connate in a short tube; lobes slightly unequal, membranous, little Petals 5, spreading, the uppermost inmost rather widest. *Stamens* 10, villous below; anthers versatile, longitudinal. Ovary shortly stipitate, many-ovuled, from disk; *style* filiform, infolded in bud; *stigma* minute. *Fruit* a linear, torulose pod, opening a little coriaceous or almost woody. *Seeds* oblong, elongate; hilum almost apical.

683. Parkinsonia aculeata Linn.; F. 13. I. ii. 260; E. D. P.

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, small; *stipules* small, caducous; *bracts* 0. *Flowers* showy, in terminal coryntube; segments valvate, subequal. *Petals* imbricate, subequal or the uppermost innermost Stamens 10, decimate, free; filaments villous below, uniform; dehiscence longitudinal. *Ovary* sessile, many free from the disk; style filiform or short clavate; *stigma* truncate, ciliolate. *Fruit* a flattened, woody, straight pod, within. *Seeds* transverse, oblong, albuminous; hilum small.

684. Poinciana regia Boj.; F. 13. I. ii. 260; E. D. P.

Planted in most of the provinces.


This was introduced to India from Mauritius; the general position that it is a native of Madagascar does not appear to be correct, hence it came to Mauritius is not exactly known.


Tall trees; *leaves* 2-pinnate; leaflets many, small; *stipules* small; *stipels* 0. *Flowers* showy, in dense subpaniculate racemes
with thickened rachis; bracts membranous, coloured, caducous; segments connate in a very short, disk-lined tube; the 4 upper united for some distance; petals, the lowest usually quite free. Petals the uppermost innermost widest, the lateral obovate, narrow. Stamens 10, deciduous; filaments many-ovuled, free from the disk; style somewhat dilated; stigma small, terminal. Fruit a thick, straight, oblong; hilum small.

**COLVILLEA RACEMOSA** Boj.

*Planted occasionally in most of the provinces. A medium-sized tree; introduced from Mauritius.

**Mezoneuron** Desf.

Prickly, woody climber; leaves abruptly 2-pinnate; pinnate in the inflorescence; leaflets small, numerous, or large, few; stipules connate; flowers racemose, racemes axillary in the inflorescence; bracts narrow; bracteoles many-ovuled, free from the disk; segments imbricate, subequal, or the uppermost inmost largest; petals 5, orbicular, long-clavate; stigma terminal, minute or divided; fruit a chinchoid, amentum, long-pressed, orbicular or reniform; albumen 0.

**Pod** 1-seeded; leaflets 4-5-jugate, large, ovate-acute; stamens much exceeding the calyx:

- Leaflets 9-11-jugate, or less long; wing of pod 4 in. or less wide...
- Leaflets 9-11-jugate, or more long; wing of pod -5 in. or more wide

**Cucullatum** var. grandiflorum.

Chota Nagpur; N. Bengal.

A very extensive climber.

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**tipinia cucullata** F. I. ii. 358.

Chota Nagpur; N. Bengal.

A very extensive climber.
BENGAL PLANTS.


*Behar; Chota Nagpur; Chittagong.*

A very extensive climber.


*tecsalpia enneaphylla_ F. B. I. ii. 363.

*knittagong.*

A climbing shrub.

290. _Caesalpinia_ Linn.

_2nirTT_ Shnìts Or climbers, prickly or unarmed; leaves abrup^.

ST 1 __*PmDæ abra* P%P'"^te_; leaflets many small, "**•

firmer larger; stipules various; stipels 0. _lowers_ often sho^-

" lax racemes in the upper leaf-axes or in dense panicles at en&

a SW 1 A^CTs 0adu0OUS b racteoles 0. _Sepals_ 5, connate *

WnLfi; 

sp" cove outermost. _Petals_ 5, orbicular or oblong, usually obwj-

S t a ^ X t ^ UnecluAl imbricate. * e uppermost inner.^; 

aX 10 free, decline; filaments villous or glandular at base;

^ZXIT 2 dehiSceNeCe ^ tudinal. oIrj sessile, its ^

eWa e «DMk> few OT, eWl e vermiculate, its l^ 

obknl 8 _lg terminali mTe truncate or concave. Fr^" 

outside, usually occluded between the seeds, or an indehiscent*

coriaceous or alnii host fleshy, subturgid lomentum. _Seeds_ tra^s

verse, ove & with orbicular; albumen 0.

Pod armed with abundant wiry prickles; petals narrow ....jionii"^ 

Pod unarmed; petals broad —

Pod dry, involucre mit.

_Leaflets_ few, coriaceous, large; pods short; seeds solitary or » « « •

Null""

_Leaflets_ many, longer than br; only subcoriaceous.

Stands, Òr, far exserted; petals, oonglawed; pods thin/**

shap............. ***petcherrima.***

.............. _petals_ short-clawed:

Pod wingless, broadly blunt-

pointed, with a recurved beak........... S<"".

_ Stipules large; upper petals smaller " _the others; P^*

narrowly winged along the ventral suture. -nd-pointed, wj

a straight beak ...................................... _sepia._

Pod somewhat fleshy, thick-valved, with widened sutures, turgid,
C<°*<dpini*i

LEGUMINOSJE.

449

628 C^SALPINIA BONDUCELLA Fleii.; F. I. ii. 357; F. B. I. ii- 254; E. D. c. 6.

N. and C. Bengal; Chota Nagpur; Sundiibuns.


G. paniulata F. I. ii. 364.

Sundriibuna; Chittagong, coast.

Ad ^n extensive, shrubby climber.

~90 - CUSALPINIA 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


oy1 - 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.

6 2 - 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.


6g4 - C^SALPINIA DIGYNA Rottb< . N. B. I. ii. 256; E. P. O. 26.

G. oleosperma F. I. ii. 356.

Chota Nagpur; Behar; N.Bengal; Chittagong.


Suborder III. MIMOSE^E.

T4\n
GeS or shrubs » rarely herbs; leaves always compound, 2-pin-

or rarely simply pinnate. Floivers regular, sometimes

rnoue, almost always capitae or spicate. Sepals 5, some-

4, rarely 3 or 6, valvate, very rarely imbricate, connate

Wiir u 51 ofched or 5-lobed, less often 4-, 3-, or 6-lobed calyx

alvate, free, or sometimes connate in a lobed corolla,

* pogymus or slightly perigynous. Stamens as many as sepals

or both, sometimes numerous, free or monadelphous or
BENGAL PLANTS.

Adnate to tube of corolla. Carpels free. Seeds sometimes ariliferous with little or no albumen; embryo with flat cotyledons.

Anthers gland-tipped; stamens 5-10.

Calyx-teeth short, imbricated; filaments usually either connate at a base; inflorescence capitate, heads large; trees.

Calyx valvate; filaments free:

Inflorescence elongated:

Large tendril-bearing climbers; leaves with few leaflets; very long and wide; seeds huge; flowers sessile; leaflets opposite.

Trees or shrubs without tendrils; leaves with many leaflets; narrow:

Flowers shortly stalked; leaflets fairly large, not contiguously 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 minutely contiguous. Prospis.

Pod thin, coriaceous, at-length contorted; leaflets minute, contiguous.

Inflorescence capitate, heads small: Xylocarpus.

Maihara or subaquatic herbs, with small, thin pods, opening by upper suture. Neptunia.

Undershrubs with clawed stigmas.

Pods many, curved, with united 4-valved valves and thin, coriaceous pods: Dillenia.

Filaments free:

Stamens definite, 2-5; petals 2-5; sepals 2-5; calyx valvate, rarely 0:

Pods trigonal, sutures continuous; valves dehiscing throng-wisely indehiscent, rarely only between the seeds:

Sutures thin; pod indehiscent or if dehiscent, the valves opening elastically.
JSuturea 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; pinnate, even-pinnate; leaflets very many, small, opposite; stipules minute; stipels 0. Flowers numerous, in dense, clavate or subglobose, *g-peduncled axillary solitary, or terminal paniculate heads; petals ligulate,spathulate; lowest flowers male or neuter. Sepals connate in a small tubular calyx, tube adnate to petals or free; lobes short, imbricate, somewhat 2-lipped. Petals 5, linear-pathulate, connate to the middle or free, valvate or subvalvate. Anthers 10, exerted, connate below, and there adnate to corolla rarely free from the petals; anthers oblong, gland-tipped; Fruit clustered, the clusters 2-seriate. Ovary sessile or stipitate, *v-novulate; style filiform; stigma small, capitdate, terminal.

PARKIA BIALANDULOSA W. & A.; F. B. I. ii. 289. Mimosa

Mimosa pedunculata F. I. ii. 551.

Often planted.

292. Entada Adnns.

Very large, woody climbers; *v-phylls 2-phmate, the ultimate stipules small, setaceous; stipels 0. Flowers in slender spikes, V-shaped the branches, sometimes paniculate; uniform hermaphrodite.
or polygamous; bracts minute, triangular or subulate; bracts minute, triangular or subulate; 

0. Sepals 5, connate in a campanulate calyx; teeth 5. 

Petals 5, free or slightly connate, valvate. 

Stamens 10, free or slightly connate, valvate. 

Stamens little exserted, filiform; anthers shortly oblong, gland-tipped; pollen-granules many. 

Ovary subsessile, many-ovuled; style filiform; stigma terminal, truncate, concave. 

Fruit a linear, falcate, torulose pod, septate within, the coriaceous, much twisted after dehiscence. Seeds small, polished, pink or pink with black eye, often with a thin, covering.


Chittagong; ChotaNagpur; Orissa. 

A large climber. Beng. Gila; Uriya Gerendi.

293. Adenanthera Linn. 

Erect, unarmed trees; leaves 2-pinnate; pinna opposite, by their leaflets alternate, even-pinnate; stipules very minute, collateral; stipels 0. 

Flowers in slender, subspicate racemes, solitary axillary, or terminal and panicled; bracts 0; bracteoles 5. 

Sepals 5, connate in a campanulate tube; lobes short. 

Petals connate below, valvate. 

Stamens 10, free, hardly exserted; 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 coriaceous, much twisted after dehiscence. Seeds small, polished, pink or pink with black eye, often with a thin, covering.

697. ADENANTHERA PAVONINA Linn.; F. I. ii. 370; F. B. I. ii-287; E. D. A. 471. 

Chittagong; Tippera. 


294. Prosopis Linn. 

Shrubs or trees, with scattered prickles; leaves evenly 2-pinnate; pinnae usually few-paired; leaflets coriaceous; 

S. S. T. or S. sometimes A-scented stipels 0; interfoCH^ 

spikes or in subspic. 

Sepals connate in a campanulate calyx; teeth short; 

"w/small, in narrow 

Fiuwe, long-peduncled racemes; bracts 0; bracts connate in a campanulate calyx; teeth short;
**293. Dichrostachys DC.**

Shrubs; branches here and there spinescent; leaves evenly 2-pinnate; leaflets many, opposite, small; stipules lanceolate; stipels 0. Flowers in cylindric, often nodding, uncled spikes on short, axillary branchlets, the uppermost flowers yellow, the lower neuter purplish; bracts minute or 0; acteoles 0. Sepals 5, connate in a campanulate calyx; teeth 0. Petals 5, connate below, valvate. Stamens 10, free, exserted; anthers ovate, tipped by stalked glands; pollen-suckles many. Ovary subsessile, many-ovuled; style filiform; stigma terminal, truncate. Fruit a linear, twisted, coriaceous, dehiscent or irregularly disarticulating lomentum, continuous. Seeds obovate, compressed.

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**296. Neptunia Lour.**

Enjual herbs or undershrubs, branches often compressed or angled; leaves evenly 2-pinnate; leaflets small, sensitive; stipules insistent; stipels 0. Flowers small, in ovate-globose, panicled clusters; upper flowers i, lower *, lowest neuter **Protruding, flattened staminodes; bracts minute; bracteoles 0. Petals 5, connate in a campanulate tube; teeth short. Petaloid **Stamens in * and t flowers, rarely 5, free, exserted, tipped by a stipitate gland; pollen-suckles numerous, staminodes in neuter flowers 10, petaloid, exserted. Ovary stipitate, many-ovuled; style filiform; stigma.
small, terminal, concave. Fruit an obliquely oblong flattened, coriaceous pod. Seeds transverse, ovate, c
flattened, coriaceous pod.

Stems prostrate or nearly so; leaflets of a pinna 8-15-jugated oblong, 6-10-seeded. Stems ascending, stout; leaflets of a pinna 20-30-jugate; ligulate, 15-20-seeded.


C. Bengal, in jheels.


C. Bengal, introduced only.

A stoutish marsh-plant; native of America. Belati pani-najak.

297. Xylica Benth.

A tall, hard-wooded tree; leaves evenly 2-pinnate; leaflets opposite, even-pinnate, large, few; linear, deciduous; stipels 0; interfoliclar glands few. 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; a sessile, broadly falcate, flat, very thickly woody pod, elastically but tardily; septate within. Seeds oblong, compressed.

298. Desmanthus Willd.

Perennial herbs or undershrubs; branches striate or striate; leaves evenly 2-pinnate; pinnae even-pinnate; leaflets stipules setaceous; stipels 0. Flowers in ovate-globose heads. Biflatory axillary peduncles; all f or the lower neuter; some...
bracteoles 0. *Sepals* 5, connate in a campanulate calyx. *Petals* 5, free or slightly connate, 10 or 5; filaments free, filiform; anthers ovate, not gland-tipped; pollen-granules numerous. *Ovary* subsessile, subulate or clavate; stigma small, terminal, straight, coriaceous pod, continuous or "Seeds" longitudinal or oblique, ovate, com-

*DESMANTHUS VIRGATUS* Willd.; F. B. I. ii. 290.

C. Bengal, naturalised, but rare.

A perennial undershrub with twiggy branches.

300. *Mimosa* Linn.

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; *Petals* 4, connate below, valvate. *Stamens* 4 or 8, filaments free, filiform; anthers ovate, not gland-tipped; pollen-granules numerous. *Ovary* stipitate, many-ovuled; style filiform; stigma minute, terminal. *Fruit* a flat, membranous,
disarticulating lomentum; the 1-seeded joints separate from the persistent sutures; subseptate or constricted.

Seeds ovate or orbicular, flattened.

Stamens as many as petals; rachis of leaf bristly; pinnre digitately congested; sutures of pod very prominent.

...or with only a few prickles; large shrubs or small trees...

705. MIMOSA PUDICA Linn.; F. I. ii. 564; F. B. 1-...u...

706. MIMOSA RUBRICAULIS Lanik; F. B. I. ii. 291; M. octandra F. I. ii. 564.

301. Acacia Willd.

Trees, or erect or climbing shrubs; leaves evenly 2-pinnately compound; leaflets small; stipules small or sometimes spinescent; stipels 0. Flowers in cylindric, globose heads; peduncles axillary solitary or fascicled, ox.

Sapindaceae

Fruit aligulate or oblong, flat and dry, rarely turgid and subcoriaceous pod, or an indehiscent lomentum, continuous or occluded or septate within, but never disarticulating, sutures not thickened. Seeds transverse or longitudinal, usu
Bark white; calyx downy, not much shorter than the pale petals;

Pinnatifid, 10-20-jugate; leaflets 1-4-jugate. 

Bark brown; calyx less than half as long as the dark-yellow petals.

Pinnatifid, 20-40-jugate; leaflets 30-50-jugate;

Calyx, petals, and rachis covered with spreading hairs...

Flowers in globose heads; spines long and straight: LP...

Heads axillary:

Pod with a pulpy mesocarp and 2-seriate seeds, thick, cylindric, glabrous, with straight sutures;

Flowers purple; pod thin, flat, seeds, thinly grey-downy; pinnae 2-5-jugate.

Heads in simple terminal panicles; flowers 7-10-jugate. 

Pod thickened, valves depressed, and sutures not sinuate between the seeds, finely grey-downy, jugate; leaflets 10-20-jugate.

Pod thin, flat, sutures not sinuate between the glabrous; pinnae 2-5-jugate; leaflets 10-20-jugate.

Flowers purple; pod usually quite glabrous and almost always with prickles; if without prickles then glabrous.
buma F. I. ii. 563.
Chota Nagpur; W. Bengal.

ACACIA CATECHU Willd.; F. B. I. ii. 295; E. D. A. 135.
Mimosa Catechu F. I. ii. 563.
J Chota Nagpur; Orissa; E. Bengal, Madhupur
jungles.
and Sant'al. Khayar

ACACIA CATECHU
partly. Mimosa
C.
A medium-sized tree. F. B. I. ii. 295

ACACIA CATECHU
Mimosa
чарак gbooleanioide* F. I. ii. 562.
N. and E. Bengal.

ACACIA ARABICA Willd.; F. B. I. ii. 293; E. D. A. 101.
Mimosa arabica F. I. ii. 567.
Tirhut; Behar; C. Bengal.

ACACIA ARABICA Willd.; F. B. I. ii. 293; E. D. A.

ACACIA TOMENTOSA Willd.; F. B. I. ii. 294; E. D. A. 299.
Mimosa tomentosa F. I. ii. 558.
Central Bengal; Sundribuns.
A small tree.

ACACIA LEUCOPHLEGE Willd.; F. B. I. ii. 294; E. D. A. 249.
Mimosa leucophtlege P. I. ii. 558.
Orissa

ACACIA CONCINNA DC.; F. B. I. ii. 296; E. D. A. 200.
Mimosa concinna & I. ii. 565.
N. Bengal; Chittagong.
716. **ACACIA INTSIA** Willd.; F. B. I. 297;

Mimosa Intsia F. I. ii. 565.

Sundrihus; Chittagong.

An extensive climber.

717. **ACACIA** C«HA W. & A. A. *Intsia* var. C ««« •

E. D. A. 233. JhMiwa C«wa F. I. n-> £ a1, Madhupur

W. Bengal; Chota Nagpur; Orissa; B. ene]

jungles.


718. **ACACIA PENNATA** Willd.; F. B. I. ii. 297,

M. torta F. I. ii. 565.

W. Bengal; Chota Nagpur. .., Kundaru; Sa

A large climber. *Hind. Biswal; donatal*.

Undaru. ..

71^/2. Var. **ARROPHULA** Bak.; F. B. I. 298.

Chittagong.

A large climber.

302. **AlbimiaDuva,**  leaves eveny

Considerable trees, rarely climbing shrubs...

- Pinaute; pinne even-pinnate; leaflets large.

-netous, or small very many; stipules small

7f, subfoiaceous; stipels0. *Flowers* in ***

ranches; bracts 2 or 0; bracteoles 0. *- in a

0^ panulate or tubular calyx; teeth or lobes »

ate below in a funnel-shaped corolla; lobes

but conuate below in a tube, somewhat ex

*U-granules 2-4 in each cell. * the. ***

*ry compressed, thin pod or lomentum.

* * ** Smla ovate or orbicular, compressed; fumcle

Jing shrubs.) the pulvin ug below the leaf-base "£? *£l" n ^

w- curved hook; leaflets numerous, narrow-hnear.

^-nevve, close-set,  " myHoJhyiu.

**^ usuall tall trees; pulvinus not persistent:-

^t'Pules very large; leaflets numerous, narrow.

DeAv^t uppi. margin, hardly close-set [p. 450]
BENGAL PLANTS.

*Stipules small:—[p. 459]

Leaflets numerous, narrow, close-set:

Leaflets narrowly ovulate with median main-nerve; *flin pubescent with spreading hairs; flower-heads solitary or **marc.

Leaflets linear with main-nerve nearest upper margin? *illary rachis puberulous with very short hairs; flower-heads in *illary corymb.

Leaflets ovate, not close-set:

Leaflets ovate, not close-set;—

Leaflets 8-24-jugate, main-nerve nearer the upper mam-rachis with one basal and 1-2 distal glands Wm. & al. bases of the upper pairs of pinna*.

Leaflets usually fewer; leaves with 1 basal gland on ra a i S b U t n o e between bi ses of the distal pairs of P. inn. & edds.

Main-nerve rather nearer lower than upper margin, copiously paniced, florets sessile; leaflets 6-12-JUK pinnae 2-6-jugate; pods brownish..............f pliscd ; Main-nerve median; heads not paniced, florets Vskg jute. leaves 5-9-jugate; pinna 2-3- (less often 4-, ***%*. jugate; pods pale./...

Leaflets acuminate, the terminal pairs 4 in. long, 1-3 jugate; main-nerve median; pinna 1-2-jugate.

719. ALBIZZIA MYRIOPHYLLA Benth.; F. B. I. ii. Wm. mijriophylla F. I. ii. 549.

Chittagong.


Chota Nagp.

721. AMARA B. hind. Siran; Een. Amlukia.

722. ALBIZZIA RICHARDIANA King & Prain.

Plantedin C. Bengal.

A tall, handsome tree; native of Madagascar. Beng.
LEGUMINOSM.

728. **ALBIZZIA ODEATISSIMA** Benth.; F. B. I. ii. 1-461; E. D. A. 711. *Mimosa odoratissima* F. I. ii. 546. "noontay" in Behar; Chota Nagpur; Chittagong; but often planted in other provinces.

A tall tree. **Santal Jang siris.**

724. **ALBIZZIA PROCEA** Benth.; F. B. I. ii. 299; E. D. A. 690.

*Mimosa procera* F. I. ii. 544.

In all the provinces. Generally planted.

A medium tree. **Vernac. Sirissa.**

726. **ALBIZZIA LUCIDA** Benth.; P. B. I. ii. 543; E. D. A. 690.

*Mimosa lucida* F. I. ii. 544.

C. Bengal; E. Bengal; Chittagong.

A medium tree. **Beng. Sil-koroi.**

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304. **Pithecolobium** Mart.

TaU trees; leave, evenly 2-pinnate; pinnae even-pinnate; U (in our species) large; stipules 1 terminal; Senales.

conpate in a campanula calyx; limb toothed. **£££.**

;teinas. deo, cleft corolla; lobes valvate. S "-aadelpous below; filaments filiform, much exerted; a "aat-liquid; pollen-granules in each cell 8-fc 0 K tap tate, ovand; style filiform; stigma terminal, "tato, "i "x A "hin; sutuves much thickened; valves 8 "s s e d.

***the tip backwards. Seed* obovate or orbicular. complc.

727. 64m<siMU UMBROSA Benth.; F. B. I. »- ^o2-

Chittagong.

A, small tree.

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725. **LEBBEK** Benth.; F. B. I. ii. 298; B. D. A. 690.

*Mimosa Sirissa* F. I. ii. 544.

Generally planted.

A medium tree. **Vernac. Sirissa.**

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303. Calliandra Benth.

"Si<baortreaes; & «»«. evenly 2-pinnate; pinnae even-pinnate; U (in our species) large; stipules 1 terminal; Senales.

conpate in a campanula calyx; limb toothed. **£££.**

;teinas. deo, cleft corolla; lobes valvate. S "-aadelpous below; filaments filiform, much exerted; a "aat-liquid; pollen-granules in each cell 8-fc 0 K tap tate, ovand; style filiform; stigma terminal, "tato, "i "x A "hin; sutuves much thickened; valves 8 "s s e d.

***the tip backwards. Seed* obovate or orbicular. complc.
or 0; bracteoles 0. Sepals 5, rarely 6, connate in a tubular calyx; teeth very short. Petals 5, rarely a tubular corolla with long, valvate lobes. Stamens far exserted, connate below in a tube; anthers small, granules in each cell 2–4. Ovary sessile or stipitate, style filiform; stigma minute, capitate. Fruit a ligulate, less often only falcate, usually much twisted pod, or indehiscent lomentum, with unthickened sutures.

Stipules spinescent; pinnae and obtuse leaflets each 1-jugate, covered by a white, pulpy, edible aril. Stipules not spinescent; pinnae 2–3-jugate, and large, seeds arillate or embedded in pulp, ovate or orbicular, compressed.

Planted everywhere, but often also self-sown. A medium tree; often also trimmed as a hedge. Vern. Belati anah* babul.

729. PITHECOLOBIUM ANGULATUM Benth.; F. I. Mimosa heterojriylla F. I. ii. 545.
Chittagong; Tippera. A tall tree.

305. Enterolobium Mart.
Erect trees; leaves evenly 2-pinnate; pinnae even leaflets opposite; stipules small, lanceolate; stipels in globose heads, on solitary or subfasciculate peduncles, or the upper racemose; bracts lanceolate; bracteoles 0. Connate in a campanulate calyx; teeth triangular. Petals numerous; filaments much exserted, connate below; small; pollen in 2–4 granules in each cell. Ovary sessile, ovuled; style filiform; stigma small, terminal. Fruit a compressed, indehiscent lomentum, septate within seeds; epicarp crustaceous; mesocarp hard or spongy or endocarp cartilaginous, continuous with the septa. Seeds Verae, compressed; funicle slender.
730. ENTBELOIDID SAMAN Prain; E. P. A. 720; P. 909.
Planted; especially in Central and Eastern Part of
A medium-sized spreading tree; pods pulpy.
Tropical America.

Order XLYII. ROSACE*.

Herbs, <h_rubs>, sometimes sarmentose or climbing, ox: trees.
* alternate, rarely opposite, simple or compound; «*»
* alternate or adnate to petiole, very rarely obsolete. *flower. usual\]*
\W and hermapLDite. *flower lining the calyx-tube or forming a
* ring at its base. *sepals connate in a tube, adnate to the ovary or
\e; 1_\imb usually 5-lobed, the fifth lobe uppermost, lobes
\ally persistent) oftenbracteolate, imbricate or j. W j ^ \f
\s, «% 0, inserted below the margin of the disk, dec.
Orally imbricate. *stamen, numerous, pengyoun, rarely1^0 r 5
\h one or many series, sometimes connate and deh\^to, se\f
\«mi\nt, 8ubulate orUtiforma, usually incurved in bud, anthers
H didymous; dehiscence longitudinal, int^se. C\nebl or
\ bee or connate; styles basal, lateral, or -f^\Qa^ or
\onnate; stigmas simple or capitate or penicUlate; ovules i or
\ in each carpel, anatropous, pendulous with a vent.al, or
\-Ending \ a^4orsal raphe. *fruit usually * C e ^
\ C 1 \^ henes or drupes, or a berry, or single drupe, rarely
\capsular dehiscent. *Seel erect or pendulous; ^ t a nienibraneous
\ or cor\leous; albumen 0; embryo with large, flat, fleshy cotj^
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* 5-0, minute when 5-6-lobed, absent when *calyx* 10-15-lobed; even *5-6-seriate* at mouth of *calyx*; *stamens* 50, 1- or more-seriate at mouth of *calyx*, incurved; *anthers* small. *Carpel* solitary at the *calyx*-tube, ovoid or subglobose; *style* terminal, slender, *stigma* terminal, capitate; *ovules* 2, collateral, pendulous; *style* ventral, persistent; *fruit* a large, fleshy receptacle, subtended by many minute *chenopodium* achenes sunk in its surface. *Seeds* minute. *cotyledons* thick, hemispheric; *radicle* minute, superior.


N. Bengal; Chittagong.

A tree; *drupe* dark-purple, an inch across.


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 *scape*; *bracteoles* 5, close under *calyx*, connate in a persistent, obconic or turbinate, disk-lined *calyx*; *lobes* valvate in bud. *Petals* 5. *Stamens* many, 1-seriate, tent; *filaments* filiform, glabrous; *anthers* didymous. *Carpel* numerous on a convex receptacle; *style* ventral, persistent; *fruit* a large, fleshy receptacle, subtended by *fruit* with many minute *chenopodium* achenes sunk in its surface. *Seeds* minute.

Flowers yellow; *fruit* insipid.

Flowers white; *fruit* ediable.
Tippera.
A herb with long, slender, prostrate stems.

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.

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 late tube; lobes valvate. Petals 5 or 4. Dish 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, red on a small, dry receptacle. Seeds minute.

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.

Rubus Linn.
Prickly; leaves alternate, simple or compound; stipules or free. Flowers in terminal and axillary corymbose cymes, solitary, white or red; bracteoles 0 under the calyx. * * * 5, connate in a wide, short-tubed, disk-lined calyx; lobes * * * * * ftw.6. Sternae many. Carpels many or few, on * * * * * or conical receptacle; style subtenuinal; ovules A, pollinated, pendulous. Fruit usually a cluster of numerous, small, **led drupes, crowded on a dry or spongy conical or subconical receptacle; rarely drupes few, very rarely solitary. Seed pen-
**310. Rosa Linn.**

Shrubs, erect, sarmentose, or climbing, usually prickly; pinnately 3- or more-foliolate; leaflets more or less stipules adnate. Flowers terminal, solitary or corymbose, yellow, or red; bracts rarely persistent. Sepals 5, connate; persistent, globose, ovoid, or flask-shaped tube with mouth; lobes leafy, persistent or deciduous, imbricate. Normally 5, in cultivation often many. Disk lining the calyx-tube, silky. Styles many, inserted on disk. Carpel, many, rarely few, in the bottom of the disk. Styles sub-terminal, free or connate upwards; stigma thicker, ovule solitary, pendulous. Fruit a fleshy calyx-tube (rose-like) enclosing a cluster of coriaceous or bony achenes. Seeds small.

Fruit and branchlets densely tomentose; flowers subsessile, white, strongly pear-scented, somewhat unequal, glandular, ciliate; petals reflexed in flower. Bracts few, sepal reflexed in flower.

Prickles mixed with often glandular bristles; flowers delicately scented, rose or purple.

Prickles unequal, the larger ones hooked:

- Bristles many; leaves and calyx glandular, ciliate; petals reflexed in flower.
- Prickles equal; sepal reflexed in flower.
- Calyx-tube obovate.

Indica (semperflorus).

737. ROSA INVOLUCRATA Roxb.; F. I. ii. 518; F. B. I. ii. 865; E. D. R. 582.

Chota Nagpur; N. and E. Wild Rose of Bengal. Strange: 2 mny season.

739. ROSA CENTIFOLIA Linn.; F. I. ii. 513; F. B. I. ii. 364; E. D. R. 504.
   In gardens.

740. ROSA GALlica Linn.; F. B. I. ii. 364; E. D. B. 526.
   In gardens, occasionally.
   A small, erect shrub.

   In gardens, frequent.

741/2. Var. SEMPERFLORENS. *B. semperflorrens* F. I. ii. 514.
   In gardens.
   A small, spreading shrub.

742. ROsa ALBA Linn.; F. B. I. ii. 364; E. D. B. 501. *B. glan-
   dulifera* F. I. ii. 514.
   In gardens.

311. ERioBOTRYA Lindl.
La*ge* or small trees; *leaves* entire or serrate, simple, thickly
c*aceo*us; *stipules* narrow-lanceolate, or broad. *Flowers* white, in *rosoid* panicles. *Sepals* 5, connate in a turbinate, obconic, or
*Wte* tube; *lobes* small, ovate, obtuse, persistent, spreading of erect. *peta* 5, contorted or imbricate in bud, orbicular or
<ovate>, often notched and oblique, margins sinuate; clawed or Pilous. *Stamens* about 20, inserted on the calyx-limb; *filaments* b*one*.

*Pet* connate in a 2-5-celled inferior ovary; *styles* 5; *ovules* 2 in each cell, basal, ascend-
Fruit a succulent or dry berry, 2-5-, rarely 1-locular; endo-
*P membranous; chambers* 1-, less often 2-seeded. *Seeds* erect,

313. ERIOBOTRYA BENGALENSIS Hook. f.; F. B. I. ii. 371.
   Chittagong.
   A large, stout tree.
744. ERIobotrya Japonica Lindl.; F. B. I. ii- 372 ;
Mespilua japonica F. B. 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; small, white, in few-flowered corymbs with ultimately branchlets. Sepals 5, connate in an obconic tube; petals 5, contorted, obovate, oblique and notched; stamens 20; filaments slender. Carpels 2-3, connate in a stigma; styles 2-3, connate more than half their length; 2-fid, capitate; ovules 2 in each loculus, collateral; fruit a small, ovoid or globose berry; flesh seeds 1 or 2; endocarp membranous. Seeds ellipsoid, rather thick.

ii. 382.
N. Bengal, Western Duars.
A shrub.

Order XLYIII. Saxifragaceae
Trees, shrubs, or herbs. Leaves alternate with stipules to petiole or 0, or opposite with stipules 0. Flowers pedate or polygamo-dioecious, regular. Dish swollen or united in a calyx with the tube usually more or less a ovary, but sometimes almost or quite free; lobes in 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, occasional; filaments free, sometimes dilated and 2-lobed; anthers small, didymous; dehiscence longitudinal, lateral or to rarely extrorse. Carpels usually 2, less often 3-5, unit or 2-locular, less often 3-5-locular ovary with axial placentas; styles many as carpels, free or connate towards the top, stigmas capitate or lateral subcapitate; ovules numerous, anatropous, erect.
313. Yahlia Thunb.

Herb, or biennial, pubescent, often glandular, erect herbs; opposite, entire; stipules 0. Flowers axillary, subsessile or subspherical, often geminate, white. Sepals 5, connate in a hemicylindrical tube adnate to the ovary lobes persistent, ovate or lanceolate. Petals 5, inserted on the margin of the epigynous tube, obovate, shorter than sepals. Stamens filaments subulate. Carpels 2, connate in an inferior styles, inserted on the margin of the epigynous tube, many-ovuled placentas; styles 2, filaments naked at the base. Fruit a capsule, dehiscing at the apex of the styles. Seeds many, minute, ellipsoid, smooth.

W. Bengal.

Order XLIX. CRASSULACEAE.

Herb, with often a woody rhizome, or undershrubs; stems and leaves alternate or opposite, usually succulent. Leaves alternate or opposite, usually sessile; stipules 0. Flowers regular, hermaphrodite or 1-sepal, usually in cymes, sometimes subspicate or paniculate. Sepals connate in a 4-5-, more rarely 6-8-fid, tree capsule. Petals 4-5, rarely 6-8, free or connate. Stamens as many as petals; filaments either form or subulate; anthers linear or didymous; dehiscence longitudinal, lateral. Carpels 4-5, very rarely fewer, free or consist...
BENGAL PLANTS.

Bryophyllum Salisb.

Tall, erect. Flowers large, erect, reflex herbs; leaves opposite, crenate. Sepals 4, connate in an inflated, cylindric, or 4-angular blade, with a Portly 4-fld limb; corolla-tube, the limb spreading 4-partite, filiform! Petals 4, connate in a campanula inserted at the base, narrowed into long, exserted seed follicles. Stamens 8, 2-seriate, anthers oblong, inserted in the tube; filaments filiform! Hypogynous scales 4, obtuse; stigmas capitate, ovules solitary; albumen fleshy; embryo minute.

Calyx with a lonе in the ventral suture, rarely few, very few, follicles dehiscing rarely few, very few, follicles dehiscing. Fruit of usually 4-5, rarely 2 or 3, rarely 1, rarely few, very few, follicles dehiscing. Bryophyllum Salisb.

Flowers large, erect, reflex herbs; leaves opposite, crenate. Sepals 4, connate in a Portly 4-fld limb; corolla-tube, the limb spreading 4-partite, filiform! Petals 4, connate in a campanula inserted at the base, narrowed into long, exserted seed follicles. Stamens 8, 2-seriate, anthers oblong, inserted in the tube; filaments filiform! Hypogynous scales 4, obtuse; stigmas capitate, ovules solitary; albumen fleshy; embryo minute.

Calyx with a lonе in the ventral suture, rarely few, very few, follicles dehiscing. Fruit of usually 4-5, rarely 2 or 3, rarely 1, rarely few, very few, follicles dehiscing. Bryophyllum Salisb.
DUOSILRACiLE.

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4 many-seeded follicles, tfccds oblong, ellip-
soids, n8tudinall y ribbed.

Leaves ob-

base vate-elliptic, crenate ; seps oblong, acute, standing apart at

Leaves III.
lanceolat> laciniate, lobes entire, subserrate or dentate; seps

Patent laciniatia.

749. KALANCHOE HETEROPHYLLA Prain. K. floribunda var. glabra


Chot$a Nagpur, Parasnath.

750 K^ St o Ut, fleshy herb

$ALANCHOE LACINiATA DC.; F. B. I. ii. 415; E. D. K. 14.

Cotyledon laciniata F. I. ii. 456.

Behar; E. Bengal. » •


Order L DROSERACEJE.

1rt erbs, rvel$om what woody below, perennial, usually small, late 

eneral ^ hairy and insectivorous. Leaves often rosu-

maphrodite, regular DisJc

a-partite CalX, or Aree> bricate, persistent. Petals 5, hypo-

Syioua ral r, perigynous, usually membranous, marcescent, free

pericarpal below, imbricate. Stamens 4-20, hypogynous or

Conaat K^ rare^y pip eta lous; filaments free or occasionally

dehisce nCG Complately or partially longitudinal, extrorse. Ovary

locular -

ir One a(An^ Anate to calyx at the base, globose or ovoid, 1-8-

Unier Styles 3-5- a'g nas capitate, 2-fid, or fimbriate; ovules

ra-ei, » » attached to parietal, axial, or basal placentas,

and 6n du10Us » anatropous. Fruit a membranous or submem-

rarely Usuall y ioculicidal, 3-5-valved capsule. Seeds numerous,

axial, c yliA ric, or basal, minute.

Leaves gla ural, $ hai> those of stem, if present, alternate ...Drosera.

Leaves Ve suUr, glabrous, those of stem opposite...........Aldrovanda.

316. -Drosera Linn.

Perennial, gJandular, pilose herbs, the glandular hairs partly

derived from tissues beneath the epidermis; loaves rosulate, basal,
BENGAL PLANTS.

the stem scapigerous, or alternate, the stem leafy, to

usually

circinate; stipules 0, or scarious and adnate. Sepals

Petals 4, 5, or 8, hypogynous or slightly perigynous, rose-

marcescent. Stamens 4, 5, or 8, hypogynous or shg-
gynous. Carpels 2-5, connate in a 1-celled ovary

styles; placentas parietal; ovules numerous. Frw

cidally opening, 2-5-valved capsule. Seeds

eellipsoid.

Stem leafless; leaves all radical, rosulate, cuneate-spathulate;

undivided

Stems leafy, decumbent; leaves alternate, long, linear; styles

their base

........................


In all the provinces except C. Bengal.


752. DROsera INDICA Linn.; F. I. ii. 113 ; F. B. I. Chota Nagpur.

A herb.

317. Aldrovanda Linn.

A weak, succulent, glabrous, floating, aquatic herb, with

late stems; leaves spathulate, orbicular, whorled at the no

blades contorted, bladder-like. Flowers peduncled, axillary-
tary; peduncles decurved in fruit; bracts 0. Sepals 5, s

connate below, oblong, obtuse, imbricate. Petals 5, hypog-
connivert in a cap. Stamens 5, hypogynous; filaments su

anthers didymous; dehiscence lateral. Carpels 5, connate

1-celled ovary, with 5 parietal placentas; styles 5, &

with terminal branching stigmas; ovules very many-
globose, 5-valved, membranous capsule. Seeds

numerous, oblong, with black, shining testa.

753. ALDrovANDA VespiuULosa Linn.; F. B. I. ii- 425<

A. Ver.

ticillata F. I. ii. 112.

C. Bengal, salt lakes.

HALORAGEJE.

Order LI. HALORAGEJE.

Herbs or Unarm subs, rarely annual, often aquatic. Leaves sometimes partly alternate, the submerged leaves pectinate. Flowers hermaphrodite or sometimes incomplete; whorls sessile; whorls sessile; whorls sometimes spicate; ovary • Y fimbriate; petals 2, 4, or 8; or Pannam, the hermaphrodite flowers; anthers 2 or 1-decious, valvate or slightly imbricate, epigynous.

Petals 2 or 4, or Decious, valvate or slightly imbricate, epigynous. Sepals connate in a calyx, with tube adnate to ovary. Petals 2, 4, or Decious, valvate or slightly imbricate, epigynous. Sepals connate in a calyx, with tube adnate to ovary. Petals 2, 4, or Decious, valvate or slightly imbricate, epigynous.

318. Myriophyllum Linn.

Glab or aquatic herbs with floating stems; leaves whorled, dentate, serrate, or the submerged ones pectinate; leaves whorled, dentate, serrate, or the submerged ones pectinate; leaves whorled, dentate, serrate, or the submerged ones pectinate; leaves whorled, dentate, serrate, or the submerged ones pectinate.

Petals in 4-furrowed tube; limb 0 or of 4 minute lobes, rarely 0-leafed ovary; styles 4, rarely 2, short, usually recurved solitary, pendulous in each chamber. Fruit 4-furrowed tube; limb 0 or of 4 minute lobes, rarely 0-leafed ovary; styles 4, rarely 2, short, usually recurved solitary, pendulous in each chamber. Fruit 4-furrowed tube; limb 0 or of 4 minute lobes, rarely 0-leafed ovary; styles 4, rarely 2, short, usually recurved solitary, pendulous in each chamber. Fruit 4-furrowed tube; limb 0 or of 4 minute lobes, rarely 0-leafed ovary; styles 4, rarely 2, short, usually recurved solitary, pendulous in each chamber. Fruit 4-furrowed tube; limb 0 or of 4 minute lobes, rarely 0-leafed ovary; styles 4, rarely 2, short, usually recurved solitary, pendulous in each chamber. Fruit 4-furrowed tube; limb 0 or of 4 minute lobes, rarely 0-leafed ovary; styles 4, rarely 2, short, usually recurved solitary, pendulous in each chamber. Fruit 4-furrowed tube; limb 0 or of 4 minute lobes, rarely 0-leafed ovary; styles 4, rarely 2, short, usually recurved solitary, pendulous in each chamber. Fruits acutely ridged along carpel backs, puberulous or glabrous, tubercled or not indumentum.
BENGAL PLANTS.

754. MYRIOPHYLLUM TUBERCULATUM Roxb.; F. 1. i. 432.
C and E. Bengal, in jheels.
A submerged water plant.

705. MYRIOPHYLLUM INDICUM Willd.; F. B. 1. ii. 433. M-
In all the provinces, in jheels and ponds.
A submerged water plant.

Order LII. RHIZOPHORE-ffl.

Trees or shrubs. Leaves coriaceous, entire rarely opposite, with stipules interpetiolar, caducous; rarely alternate with stipules 0. Flowers regular, usually hermaphrodite, usually surrounded at the base by connate or cupular bracts, rarely ciliate. Sepals connate in a calyx, almost always more or less adnate to the ovary; lobes 4-14, valvate, persistent. Petals many as the calyx-lobes, entire, emarginate, 2-fid or volute or inflexed, always shorter than calyx-lobes. Usually twice as many as petals, in antipetalous pairs emersed by the lamina, rarely numerous; filaments short or long, stamens 2-celled with dehiscence longitudinal, lateral, rarely ocellate. Ovary inferior, half-inferior or rarely superior, generally adnate to the ovary; style simple, filiform; stigma simple or lobed, usually persistent; ovary in each lomentum usually 2-5 celled. Fruit leathery, pendulous, arillate or not, in albumen, fleshy or 0; embryo in albuminous seeds minute, germinating while the fruit is attached on the tree.

*Sea-shore trees (mangroves); seeds without albumen; embryo large radicle germinating while the tree is alive. Calyx-segments and petals not more than 4; calyx sub-tubular. Calyx-segments and petals each 4; petals entire; stamens 8; ovary 3-celled. Rhizophora.*

†Calyx-segments and petals not more than 4; calyx sub-tubular. Calyx-segments and petals each 4; petals entire; stamens 8; ovary 3-celled. Rhizophora.
319. Rhizophora Linn.

trees; branches marked by leaf-scars; leaves opposite, linear to oblong-lanceolate; cymes shorter than the petioles, from axils of fallen leaves, usually 2-flowered; flowers sessile; petals glabrous, mucronate; stipules large, interpetiolar, caducous; embryo not germinating till fruit falls; calyx minutely bracteolate [p. 474].

320. Ceriops Am.

shrubs; branches thick; leaves opposite, ovate or obovate; stipules interpetiolar, caducous. Flowers in condensed, 2-3-cymose, axillary cymes; bracteoles connate round base of ovary. Sepals 5 or 6, connate in a short tube, adnate to ovary;
lobes coriaceous, valvate. *Petals* 5-6, emarginate or 12, inserted between the lobes of a fleshy disk in parallel with the petals; anthers oblong or linear. *Carpels* 3, connate, at least partially 3-celled ovary, produced above the calyx, forming a fleshy cone; ovules in each carpel 2, pendulous, short, base conic; stigma simple. *Fruit* 1-celled, fleshy, coriaceous, ovoid, with the reflexed, persistent calyx teeth surrounding its base. *Seed* pendulous, germinating on the tree; radicle elongated, perforating the apex of the fruit.

758. **CERIOPS ROXBURGHIANA** Arn.; F. B. I. ii. 437; Sundribuns.

A large shrub. *Beng*. Goran.

321. **Kandelia** W. & A.

Small trees; branches terete; *leaves* opposite, oblong, obtuse; stipules interpetiolar, caducous. *Flowers* few, in axillary, dichotomous cymes; bracteoles connate round the calyx. *Sepals* 5-6, connate in a short tube, adnate to a linear-lanceolate, valvate. *Petals* 5 or 6, bifid, with capillary lobes. *Stamens* many; filaments slender, anthers small, oblong. *Carpels* 3, connate in a 1-celled, superior ovary, produced beyond the calyx in a fleshy cone, 6, 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.


322. **Bruguiera** Lamk.

Trees or shrubs; branches terete; *leaves* opposite, coriaceous, petioled, oblong, entire; stipules interpetiolar, caducous. *Flowers* rather large, solitary or cymose on axillary peduncles; bracteoles connate in an obconic or campanulate tube, adnate to ovary; lobes lanceolate, valvate. *Petals* 8-14, opposite the involving petals; filaments filiform, in 2-lobed or emarginate, convolute at base, appendiculate. *Fruit* 16-28, in pairs opposite the involving petals; filaments filiform.
others linear, mucronate, as long as the connate in a 2-4-celled inferior ovary; ovules nate on the axis; style filiform, its base conic, 
shorter than the calyx; ovules connate in a 2-4-celled inferior ovary; ovules minutely arcuate, to- 
globed. Fruit 1-celled, 1-seeded, indehiscent, con 
blate. Seed pendulous, germinating on the tree, ra 
Prorating the apex of the fruit.

760. BRUGUIERA GYMNO RHIZA Lamk; F. 13. 476.
B.898. Bhizophora gijnorHza F. I. »•
Sundribuns; coasts of Orissa and Ohittagong.
A large tree. Beng. Kankra.

323. Carallia Boxb. osite petioled
Trees or shrubs; branches terete; leaves "Pj \nornate or elliptic, entire or semilacinulate; stipules 
axillary, 3-chotomous eymes; bracteoles
\fe connate in aclycal tube, clawed, orbicu- 
ay; lobes reticulate, diorit, valvate. Pd "A 
cr,nulated disk lining the calyx-tube, clawed, orbicula- 
2-M toothed or derate at the apex, 
stamens \nthe petals; filaments filiform, 
** 3-5, connate in a 1-celled or a 3-5-celled ovary^g^ 
conical, produced beyond the calyx; ovules 
attached axially in pairs above the middle of the calyx. Fruit usually 1-celled; 
slightly produced beyond the calyx, glbose, 
cent- Seed subreniform, with fibrous testa, allu-

"nhь to yo curved.

CAKALLIA LUCIDA Boxb. C. *tf«»m»
E. D. c. 474.
JE Bengal; Chittagong. 
An evergreen tree with shining leaves.

Order LIH.COMBRETACE*. 
Trees or shrubs, often climbing, edaphic, or 
spicate or racemose rarely eymeose, biact
BEXGA PLANTS.

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anally alternate, rarely 3, occasionally 4-7, rarely 9 or more indefinite. Stems 1-seriate, 4-5, or 2-seriate, 8, 10, and produced, some usually small. Stamens 1-seriate, 4-5, or 2-seriate, the limb or in the base of the calyx

Inflor\~oe\crescent in fruit; diffuse ram or shrubs

Calyx-limb deciduous; petals 0-

Calyx-limb deciduous, petals 5 or 4:

Calyx-limb deciduous, petals 5 or 4:

Calyx-limb persistent, alternate leaves:

Inflorescence cymose, or heads:

Quisquai\crescent in fruit; diffuse ram or shrubs

Luimnir\crescent in fruit; diffuse ram or shrubs

Gyroc\crescent in fruit; diffuse ram or shrubs

A diffuse shrub with

Petioled, elliptic or ova

large, in dense racemes, panicles towards the ends of the
A diffuse shrub with drooping branches.

**325. Anogeissus Wall.**

Leaves alternate or subopposite, petiolated, entire, glandular, or leaf-like. Sepals 5, connate in a tube, long-produced beyond the ovary, subpersistent; lobes small, deltate. Stamens 10, 2-seriate. Carpels solitary, simple; ovules 2, pendulous from apex of cell; style filiform, numerous, small, compressed, 2-winged, packed into dense, globose heads on short axillary peduncles; bracts small or lappet-shaped.

**Leaves** broad, elliptic, obtuse at both ends, glabrous beneath... *f. latifolia.*

Acute at both ends, pubescent beneath:—

**Leaves** elliptic or oblong; bracteoles obovate, often leaf-like, large... *f. acuminata.*

ANOGHEISSUS LATIFOLIA Wall.; F. B. i. ii. 450; E. D. C. 1149.

**Conocarpus latifolia** F. I. ii. 442.

Orissa; Chota Nagpur; W. Bengal; Behar.

A tree. *Hind, and Jjriya Dohu; Kol. and Santal.*

765. ANOGEISSUS LANCEOLATA Wall. A. acuminata vai. 
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 some times crenulate, often with glands on petiole or on the midrib near the base. Flowers small, spicate, the spikes some times 
panicled, (?) or the upper flowers of the spikes 6 only; bracte 
narrow, soon deciduous. Sepals 5, connate in a camp 
yate, calyx, produced slightly beyond the ovary; lobes of limb va 
triangular, deciduous. Petals 0. Stamens 10, inserted 
ary-calyx-tube, with a hairy, epigynous disk between them 
and petals. Carpels solitary, inferior; ovules 2 or 3, pendulous from the 
cell; style long, simple. Fruit an ovoid, fleshy and 
coriaceous drupe, with hard, indehiscent endocarp, exte 
smooth or with 2 or 5 angles or wings. Seed solitary; coty 
convolute.

Fruit not winged, ovoid or subcompressed:
Leaves clustered towards ends of twigs, alternate; spikes a 
simple, axillary:
Petioles very short; base of obovate leaf narrow but cordate, 
glabrous, ellipsoid, somewhat compressed, showing when dry 
marked ridges...............................
Petioles very long; base of broadly elliptic leaf cuneate; 
tomentose, globular, when dry showing 5 faint ridges...........
Leaves not clustered, usually more or less subopposite; spikes us 
panicled; petioles distinct; fruit somewhat 5-ridged, at least dry:
Leaves acute but not acuminate at apex, rounded at base 
liquid or obovoid, -75-1-25 in. long..........................
Leaves acuminate at apex, cuneate at base; fruit oblong-
2 in. long, slightly 5-ridged, even when fresh..................
Fruit with 5 subequal acute wings; spikes paniculate; leaves oppo 
or subopposite:
Leaves short-petioled, at length glabrous beneath, oblong or ellipti 
old trees, lanceolate in seedlings; wings of fruit marked with 
ascending striations; bark pale, smooth, flaky.................
Leaves distinctly petioled, usually persistently pubescent beneath 
elliptic or ovate; wings of fruit marked with horizontal striations. 
bark dark-grey, rough, corrugated
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.

TERMINALIA BELERICA Roxb.; F. B. I. ii. 445; E. L. 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.

TERMINALIA CHEBULA Iletz.; F. I. ii. 433; F. B. I. ii. 446; E. D. T. 325.
- Chota Nagpur.
A large tree. *Beng.* Hariťaki; *Hind.* and *Vriya* Harara; *Santal.* and *KoL* Rol, rola. The Black Myrobalan.

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.* Haritāki, harra.

*Pentaptera Arjuna* F. I. ii. 438.
- Chota Nagpur; Behar; W. and N. Bengal.

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, P-siered, opposite, sometimes ternate, occasionally alternate. *Flowers* small, polygamo-dioecious, spicate, spikes often panicled; *Bracts* small. *Sepals* 5 or 4, connate in an urceolate calyx, produced slightly or considerably beyond the ovary; limb de-uous. *Petals* 5 or 4, rarely 0. *Stamens* 10 or 8, 2-senâte, aed with the petals on the calyx. *Carpel* solitary, inferior; ovules 2-5, pendulous from apex of cell; style subulate, simple.
UKKOAL PLANTS.

Fruit dry, generally a drupe, occasionally opening, angles or ridges. Seed solitary; cotyledons plicate or flat, rarely convolute.

Flowers with 5 calyx-lobes and 10 petals; Bond leaves, fruit with 5 membranous wings.

Flowers with 1 calyx-lobes and 8 petals; toves au'green.学术.

Fruit with 4 papery or membranous wings:

Flowers with 5 calyx-lobes and 8 petals; toves au'green.学术.

Fruit with 4 thick, blunt ridges, not into wings...

Fruit with 4 papery or membranous wings:

Flowers with 1 calyx-lobes and 8 petals; toves au'green.学术.

Calyx very shortly produced, and not tubular beyond top ovary:

Surface of fruit between the wings more or less clothed with scales; calyx-tube beyond ovary funnel-shaped:

Surface of fruit between the wings more or less clothed with scales; calyx-tube beyond ovary funnel-shaped:

A climbing shrub; leaves opposite or often ternat; racemes short, subequal, rather numerous; calyx outside and young ovary densely glandular and finely hairy.学术.

A small shrub with annual shoots from a woody stock; leaves alternate or opposite; racemes few, one much longer than the rest; calyx outside and young ovary sparsely glandular; calyx-tube beyond ovary as a cylindrical tube.

Calyx distinctly terminated; produced beyond the ovary as a cylindrical tube.

Calyx distinctly terminated; produced beyond the ovary as a cylindrical tube.

A large shrub withendent branches. Sental.
3. COMBRETUM ACUMINATUM Roxb.; F. L H- ii. 455.
   N. Bengal; Chittagong.
   A large scandent shrub. *Vernac.* Patyuni.

4. COMBRETUM FLAGROCARPUM Clarke; F. B. I. ii. 455.
   N. and E. Bengal; Chittagong.
   A large scandent shrub.

5. COMBRETUM SQUAMOSUM Roxb.; F. I. ii. 231; r. 1*.
   ii. 456.
   Chittagong; N. and E. Bengal.
   A large scandent shrub.

6. COMBRETUM DASYSTACHYUM Kurz; F. B. I. ii. 457.
   Chittagong.
   A scandent shrub.

   ii. 457.
   Chittagong.
   A large climbing shrub.

8. COMBRETUM NANDUM Han.; P. B. I. ii. 457; E. D. C. 1744.
   Tirhut; Chota Nagpur.
   A dwarf shrub, coming up annually after forest fires.

   ii. 458; E. D. C. 1746.
   Chota Nagpur; Orissa.
   A large climbing shrub.

328. Quisqualis Linn.

*bo* scandent or subscandent shrubs; *haves* opposite, oblong or obovate, entire. *Flowers* in short axillary or terminal spikes. "f or white; bracteoles small. *Sepah* 5, connate in an *ca* narrow, slender tube produced far beyond the ov j ** deciduous with the limb. Prf «b 5- "mall. Ston«»*, "f J J ^
   r i solitary, inferior, style filiform, subadnate to ca
t. *8«a sub<Chipitate; ovules JM, pendulous from J-
   1* « a dry, coriaceous, o-angled or 5-winged, submac
   Pe. fe./ solitary; cotyledons not convolute.
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 branches, alternate, thickly coriaceous, narrow-obovate entire or subcrenate. **Flowers** small, in axillary racemes; bracteoles 2, adnate to base of calyx. **Sepals** 10 in an oblong calyx-tube, produced beyond ovary, persistent. Petals 5, oblong. **Stamens** 2-seriate, 10, usually those of one series partly or wholly absent. **Carpellary** inferior; ovules 2-5, pendulous from apex of cell, subulate. **Fruit** a woody, elliptic, oblong drupe, striate or nearly smooth. **Seed** solitary; cotyledons c.

782. **Lumnitzera Racemosa** Willd.; F. B. I- *•
L. 576. **Petaloma alternifolia** F. I. ii- 372*

Sundribsuns.

330. **Gyrocarpus Jacq.**

A considerable tree; **leaves** alternate, long-petioled or (in young plants) lobed, clustered towards ends. **Flowers** small, 1-sexual, if very many, 3-10, with hermaphrodite flowers sometimes intermixed, in a thistle-like racemes; bracteoles 0. **Sepals** 4-7, united in a spathulate inner calyx-lobes. **Petals** 0. **Stamens** 4-7, inserted at base of calyx, alternating clavate glands; anthers oblong, valvular. **Ovaries** 0. **Sepals** 4, connate in a tube, adnate to ovary; lobes of limb in pairs, outer very small, inner accent in fruit. **Petals** 0. **Stamens** 0 or in 9, solitary; ovule solitary, pendulous from the apex of cell, stigma sessile. **Fruit** a bony nut, crowned by the spathulate inner calyx-lobes. **Seed** solitary; cotyledons conv.

783. **Gyrocarpus Americanus** Jacq. **G: Jacquinii** F. I- *•
F. B. I. ii. 461; E. D. G. 780.

Orissa; S.-W. Bengal, near the sea.
A considerable tree; perhaps only planted in our ref
Vernac. Zaitan.
Order Ll. MYRTACE^l.

Trees or shrubs, rarely herbs. Leaves opposite, rarely alternate or 1-nerved, petioloed, simple, entire, rarely dentate, 3-nerved or rarely slightly irregular, hermaphrodite or sometimes polygamous, axillary, rarely subterminal, often 2-bracteolate.

Sepals connate in a superior or half-persistent 5-jim usually 4-5-, sometimes many-fid or -partite, or closed in bud. Petals 4-5, rarely 6, or fewer by abortion, or 0, or the outer slightly larger, usually much imbricate, or deciduous, valvate or imbricate, occasionally entire in bud. Staminodes usually numerous, several-seriate, rarely definite and 2-nerved or alternate with petals; filaments inserted with an intermarginal nerve, gene-

Ovary half-inferior or inferior, lining the calyx-tube. Fruit usually tipped by the calyx-tube; leaves alternate, nerves several ti-om base; bark peeling in spongy flakes; individual flowers mostly closed in bud; lobes subimbricated, rather deeply and usually gland-dotted; fruit berry-like; leaves alternate, nerves several ti-om base; bark peeling in spongy flakes; individual flowers usually not further divided when in flower; seeds numerous; Psidium.

Melaleuca.
Ovules pendulous from the top of the locules;—
Ovules from the whole inner angle or from a somewhat pro-
septal placenta:—

Embryo with small seed-leaves ..............................................

Embryo with large, fleshy seed-leaves.................................

W e s alternate, not gland-dotted : [p. 485]

Stamens partly imperfect (without an um)  

fleshy; seeds many. .............................. Carey*  

Stamens all perfect; fruit angular, fibrous; seed solitary

Barring* ortia.

331. Melaleuca Linn.
Trees or shrubs;  moesafter ter [y opposite, entire, la<x settling,  
of linear flat or subterete or f< ouct  
of the heads or *pike  
taetals deoduous.  Sel>1/S g, crounate in a subglobo  
tubes imbricate or open. Petals 5, spreading, deciduous. 8*««  
many, nor or less united at their bases into 5 bundles oppo*te  
/> petals; anthers versatile; cells paraUel, with dehiscence longi-
tudinal. Carpel* 3, connate in an inferior ovary, enclosed u.  
fr. wedg.e, ha.pe; testa thin; embryo straight.

784. MELALEUCA LEDCAMNDBONLinn.; F. I. iii- W <  
1 r.i. F1B C.  
C Bengal, in parks and gardens.  

332. Psidium Linn.
Trees or shrubs; leate » oppo-site, entire, not dotted.  i*««  
peduncles solitary or fewflowered, axillary. SYI  
= COU nate fa bud in an  ««=eo•ato or gbovaii ealy»  
= free. Stamens  
fixTneTI m «M  «ri» on a wide disk; anthers «W ng  
or 5, confl  
form, often thickish; stigma peltate or  
the cUyx-inb or n t T  Pj rifonn berry,  
hard; embryo curvT k  
y rved, ho seshed or subspir.

mXGAL PLANTS.
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 inpaniculate tube, little if at all produced beyond the ovary; limb spreading, persistent. Petals 4 or 5, spreading. Si<<cn, many, in several series, free; filaments filiform; anthers *<<ft, versatile, dehiscence longitudinal. Carpels 2, connate in the ovary; ovules 1-4 in each cell, pendulous from near the inner angle; style filiform; stigma small or urceolate.

V"" o- small berry crowned by the calyx-limb. Bee* few, <elobose or subreniform; testa membranous or hard; embryo =mol or less spiral, with a very long radicle and short cotyledons.


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

Jl. Flower, on axillary, generally slender peduncles, solitary cymes 3-7, less often numerous, the central with a show lateral with longer pedicels; bracteoles under calyx sometimes leafy, sometimes small. 890 b 4 or 5, connate in a tarto-
tube, adnate to but hardly produced beyond ovary; lobes o
h << imbricate or open. Petals 4 or 5, spreading. <<<< ^
in several series; filaments free, filiform or flattened; anthers v<<Wti or basifixed; dehiscence longitudinal. Carpels ta, l^h 4, connate in an ovary with as many perfect or pwtiri.)*U* W the septa not always reaching the axis; placentas ^ ^ tn at of 4er, sometimes 2-lamellate, with many ovules UTOgul J 0 2-seriately arranged on the axis; style filiform; stigma » : ^ely capitlate. Fruit a berry, usually crowned by the calyx h ^A sometimes naked. Sects 1-2 perfect, less << * J T ^ s<<i enif or; testa hard or membrandous; embryo : shai>cd; radicle very long, cotyledons small or lumu.ée
BENGAL PLANTS.

787. MYRTUS OOMMUNIS Linn.; F. I. ii. 497; F. N. L. ii. 469; E. D. M. 921.

In hedges; Behar; Tirhut.

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-chocho; punch; bracts usually small, deciduous. Sepals 4, rarely connate in a globose or clavate calyx-tube; lobes of limb: \\

Petals, 4, rarely 5 or more, very rarely 0, free and smaller or connate in a cap. Staminodes many, in several series, filiform; anthers subversatile; dehiscence longitudinal. Carpels 2, rarely 3, connate in 4 bundles; filaments filiform; ovules in each cell numerous; \\

fruits drupaceous or dry and fleshy, Wry, crowned by the persistent calyx-lobes. \\

Leaves opposite; flowers with 8-16 petals, purplish-red; fruit white. \\

Leaves opposite; flowers white; fruit greenish-yellow. \\

Leaves narrowed to the base, tapering incurvate. \\

Flowers all lateral, red; leaves tapering into petiole; calyx-lobes incurved in fruit. \\

Flowers terminal as well as lateral, or terminal only:—

Calyx-lobes incurved in fruit;—[p. 48] \\

Flowers sessile, in terminal 3-chocho cymes, rose-coloured or white; leaves rounded subcordate at base [p. 489]
MYRTACEÆ.

Flowers distinctly pedicelled:—[p. 488]

Leaves rounded or often cordate at base; flowers in terminal and axillary cymes, rose-purple or white; fruit pale-rose or white ...............................................

Leaves tapering into petiole; flowers in terminal clusters only, always white; fruit dull yellow.....................

Calyx-lobes spreading in fruit; flowers rather long-pedicellate in axillary and terminal cymes [p. 488]........... lanceolata

Gal²yx inside smooth, with no disk inside or under the stamens; flowers em²U; calyx-limb usually obsolete or truncate after flowering; fruits ^11, globular oblong or pyriform; seeds 1-2; endocarp often pulpy :—

§fWere in racemes or cymes; leaves, branchlets, and inflorescences glabrous:—[p. 490]

Calyx elongated, clavate; petals free; flowers in axillary raceme

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...

Bark of twigs white; branchlets of inflorescence bluntly 4-angled; calyx-base narrowed and pedicellate:

Leaves ovate or oblong:—

Fruits ovoid, as large as an olive ......................

Fruits spherical, as large as a pea .

Jambohma var. earyophylfolia:

Leaves narrowly lanceolate; fruit ovoid, ^ ^ Z n a .

Cymes terminal and axillary, or terminal only:—

Branchlets rounded, brown; fruit as large as a \ W » .

Branchlets 4-angled, white; fruit the size of a P « ^ J £

I * ^ MTV > 7 o ^ e V " 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 .

Leaves ovate or ovate-lanceolate ......................

Leaves narrowly lanceolate, ....tab«e-.............

Cymes laxly panicked; calyx sessile, margin at limb lobed; fruit the size of a sloe :—
BENGAL PLANTS.

Fruit globose; leaves not decurrent on the petiole. *Eugenia polypetala.*

Leaves ovate. *Eugenia formosa.*

Leaves obovate, *Eugenia amplexicaulis.*

Fruit ovoid; leaves decurrent on the petiole. *Eugenia macrocarpa.*

§Flowers solitary or fascicled in leaf-axils; leaves, branches, and inflorescences pubescent [p. 189].

788. **EUGENIA POLYPETALA** Wall.; F. B. I. ii. 472.

*Folia* F. I. ii. 490.

Chittagong.

A small tree.


Chittagong.

A large tree. Beng. Phul-jamb.

790. **EUGENIA AMPLEXICAULIS** Roxb.; F. I. ii. 483; F. B. I. ii. 471;

Chittagong.

A large tree.

791. **EUGENIA MALACCENSIS** Linn.; F. I. ii. 483; F. B. I. ii. 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. ii. 472.

Chittagong.


793. **EUGENIA AQUEA** Burn.ii.; F. I. ii. 492; F. B. I. 492.

B. 396.

Chittagong.


794. **EUGENIA JAMBOS** Linn.; F. I. ii. 494; F. J. 33. I. 432.

E. D. E. 432.

N. and E. Bengal, cultivated; perhaps wild in the Duars.


var. lancecefolia F. B. I. ii. 475.

Chittagong.


796. **EUGENIA CLAVIFLORA** Roxb.; F. I. ii. 488; F. B. I. ii. 484.


Chittagong.

Eugenia. | MY11TACEJE. 491

  E. Bengal; Chittagong.

- EUGENIA JAMBOLANA Lamk.; F. I. ii. 484; F. B. I. ii. 499;
  E. Bengal; Chittagong.

- EUGENIA JAMBOLEANA Wall.; F. B. I. ii. 500; E. D. E. 416.
  Behar; Chota Nagpur.

- EUGENIA HKYNEANA Wall.; F. B. I. ii. 500; E. D. E. 416.
  Behar; Chota Nagpur.

- EUGENIA OBLATA Roxb.; F. I. ii. 493; F. B. I. ii. 492;
  E. Bengal; Chittagong.

- EUGENIA VENUSTA Roxb.; F. I. ii. 491; F. B. I. ii. 488.

- EUGENIA BALSAE A Wight; F. B. I. ii. 499.
  N. Bengal.

- EUGENIA BALSAE A Wight; F. B. I. ii. 499.
  N. Bengal.

- EUGENIA OPERCULATA Roxb.; F. I. ii. 486; F. B. I. ii. 498;
  E. B. E. 458.

- EUGENIA OPERCULATA Roxb.; F. I. ii. 486; F. B. I. ii. 498;
  E. B. E. 458.

- EUGENIA OPERCULATA Roxb.; F. I. ii. 486; F. B. I. ii. 498;
  E. B. E. 458.

- EUGENIA OPERCULATA Roxb.; F. I. ii. 486; F. B. I. ii. 498;
  E. B. E. 458.

- EUGENIA OPERCULATA Roxb.; F. I. ii. 486; F. B. I. ii. 498;
  E. B. E. 458.

- EUGENIA OPERCULATA Roxb.; F. I. ii. 486; F. B. I. ii. 498;
  E. B. E. 458.

- EUGENIA OPERCULATA Roxb.; F. I. ii. 486; F. B. I. ii. 498;
  E. B. E. 458.
336. Careya Roxb.

Small undershrubs or large trees; leaves alternate, cowtate, pinnate, serrate, penninerved, not dotted, narrowed to the sessile base. Jowet large, showy, in racemes or incepted umbels. Sepals 4, connate in a campanulate or funnelling L. tube; hardly produced beyond ovary; lobes ovate, imbricate. Stamens very many, many-seriate, connate at their base; filaments filiform, the outermost and inner sterile. Carpels 4-5, connate in an inferior ovary with an annular epigynous disk; ovules many, in two rows in each cell on verticillate, style long, simple; stigma filiform. Seeds many, ellipsoid, embedded in pulp; albumen 0; embryo large with obsolete cotyledons.

Undershrub with perennial woody rootstock, the shoots annual, sprouting up after forest fires. Tree 30-60 feet high.


N. Bengal.


In all the provinces.


337. Barringtonia Foist.

Trees; leaves, alternate, crowded towards ends of branched or crenate-serrate, penninerved, not dotted. Flowers in lateral racemes ov interrupted spikes. Sepals large, showy, in a calyx-tube, scarcely valvate, imbricate, adnate at base to stam tube. Stamens very numerous, many-seriate, connate below;
filaments filiform, long, all fertile. -Carpels 2-4, connate in an inferior ovary, crowned by the annular epigynous disk; staminodia 2, each cell, pendulous; style long, simple; stigma \( \approx \mathrm{it} \) a fibrous berry, crowned by the persistent calyx-globose or quadrangular, by abortion 1-seeded. Seed ovoid; albumen 0; embryo large; cotyledons subobsolete.

**Calyx Valvate; fruit ovoid, when ripe slightly 4-angled towards base**

**Order LY. MELASTOMACEAE.**

Herbs or shrubs, sometimes climbing; rarely trees. **Leaves** opposite or rarely whorled, generally petioled, entire or nearly so, innately nerved from near the base; stipules 0. **Flowers** ter- or solitary. Dish occasionally present as a membranous or extra-staminal corona. **Sepals** connate as a calyx with usually 4-5-, sometimes 3- or 6-lobed, occasionally truncate, indumentous as a cap. **Petals** as many as lobes of calyx, inserted by vertical walls to the ovary, sometimes nearly free; rarely 4-5-, sometimes 3- or 6-lobed, occasionally truncate, innumerable. **Stamens** 1-seriate, as or more than, often twice as many as petals; filaments inwards in bud, inserted with petals, often alternately shorter and longer, some times alternately perfect and rudimentary; anthers 2-locular, basifixid; connective often appended near the base by bristles or tubercles or a spur; dehiscence usually ter- porous, rarely by short, longitudinal, introrse slits. **Ovary** 4-5-, rarely 3- or 6-locular, very rarely 1-locular; style simple,
filiform, rarely short*; stigma punctiform or truncate or capitate, less often
simple or lobed; ovules many, anatropous on axial or rarely few on a free, central place;
parietal placentas, rarely few on a free, central place,
cluded in the calyx-tube, capsular, dehiscent irregular slits or valves at the top of its cells, or an
mien 0. 

Seeds minute, usually very many, rarely solitary i
embryo with short, very rarely with long, convolute c
Leaves 3- or more-nerved from base; ovary 4-5-celled, m
radiating from axis; ovules and seeds very many ;
capsular:

Petals 4-5 ; seeds curved through half a circle, minutely
Stamens all alike...
Stamens very unequal...
Petals 3 ; seeds straight, oblong or wedge-shaped, often ang

Leaves pinnately nerved ; ovary 1-celled, placentas free, ce
usually 9 ; seeds solitary; fruit a berry.


338. Osbeckia Linn.

Herbs or shrubs, usually erect; branches generally  
leaves opposite or occasionally ternate, entire, subconac
nerved. Flowers terminal, solitary, capitae or panic
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  
slightly swollen or 2-tuberculate. Carpels connate in an
5- or 4-celled ovary, more or less adnate to calyx-tu
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:—
Capable oblong, distinctly 8-ribbed; plant 4-16 in. high ...
Capsule ovoid, very faintly ribbed ; plant 2 in. high

Anthers beaked:—

*Flowers small; calyx-tubus campanulate; a herb with droop
owers large, showy; calyx-tube urceolate, in fruit produced beyond ovary of 0.7 into a tubular neck; shrub:—[p. 494]

...calyx-tube urceolate, in fruit produced beyond ovary...stellata.

Calyx-tube urceolate; anthers narrowed upwards but not beaked; alternite. Panulate with large, flat, pectinate scales, of which 5 are with the broad-lanceolate calyx-teeth; a shrub [p. 494] nepalensis.

BECKIA TRUNCATA Doll; F. B. I. ii. 514.

Chota Nagpur; E. Bengal.

BECKIA CHINENSIS Linn.; F. I. ii. 224; F. B. I. ii. 515.

Chota Nagpur; N. and E. Bengal; Chittagong.

SCBCKIA STKLATA Wall.; F. B. I. ii. 517.

Mclastoma pulchellia P. I. H. 403.

N. Bengal, Duars; E. Bengal, Mymensingh.

A rather rigid shrub.

339. Melastoma Linn.

iUous or strigose; leaves opposite, petioled, oblong or entire, 3-7-nerved. Flowers terminal, showy, solitary or panicked, purple. Sepals usually 5, connate in an ovoid tube, beset with Bimple, rarely with penicillate hairs; lobes deciduous. Petals usually 5. Stamens 10, alternately with purple anthers and with connective produced at base to in two lobes, and alternately shorter with yellow anthers, the
connective not produced but with 2 tubercles in front, connate in a usually 5-celled, rarely 6-7-celled calyx-tube, apex setose; ovules very many on radial placentas; style filiform, simple. *Fruit* an irregularly coriaceous, or soft, berry-like capsule. *Seeds* minute, curved; minutely punctate.


In all the provinces except C. Bengal and Sundn
A spreading shrub, 5-6 feet high.


Herbs, rarely shrubby below; *leaves* membranous or fleshy, opposite, those of a pair similar in shape but in size or of different shapes and then as if alternate, usually what oblique, 3-7-nerved from the base or near it, rarely 7-nerved. *Flowers* pink or white, in scorioid, simple or umbellate cymes. *Sepals* 3, connate in a turbinate, oblong or obovate; lobes or teeth small. *Petals* 3, oblong or obovate. *Stamens* 3, equal, rarely 6, and usually slightly unequal; anthers linear oblong or lanceolated, acute or acuminate, minutely 2-lobed at base, without dehiscence apical, porous. *Carpels* connate in a 3-celled calyx-tube; ovules numerous; style filiform; stigma capitate. *Fruit* a capsule, enclosed in the persistent calyx-tube, trigonous, subcylindric, turbinate or hemispherical, dehiscing apically by 3 valves or 6 teeth. *Seeds* minute, 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-pectioted, sessile, coriaceous, orbicular-ovate or lanceolate, entire, 3-nerved, rarely 5-nerved. *Flowers* usually in small axillary, terminal, simple or panicked cymes or umbels; bracteoles the calyx paired. *Sepals* 4, connate in a campanulate tube; limb diluted, truncate or shortly lobed. *Petals* 4, blue or white, rarely reddish. *Stamens* 8, equal; filaments long 5.
LYTHRACE.

short • Vch' ,°
nec 
v radiator
8 a apex
tively witn a posterior process; dehiscence anterior
glabrous • Gis 4 » connate in an inferior 1-celled ovary, with
capped by a convex or depressed disk with 8
rarely more; Style filiform » simple. Fruit a globose or ellipsoid
berry, C Rowe
ledon s
convolute.
Branchlets rounded or only faintly 4-angled.............................edule.
Branchlets distinctly 4-angled or almost 4-winged ............niuciflorum,

816
H EMECYLON 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.

: ubs, or herbs, with often 4-angled branches. Leaves
Pio • P0sifcer sometimes whorled, rarely alternate; stipules 0.
Bexut* regulA*J
hermaphrodite, rarely oblique, very rarely 1-
P hol pa* • Dhg« o» or annular. Sepals connate in a calyx with free,
lobe • J tube; lobes 3-6 valvate » often with additional accessory
th as man y as calyx-lobes, rarely 0, inserted near
sert A of tube; Stamens few or numerous, 1-many-seriate, in-
fec 6* on calyx-tube, equal or sometimes a few smaller or imper-
H* » filaments usually filiform, rarely subdeciduate; anthers
Satlle inflexed in bud; connective sometimes thickened; dehis-
cence longitudinal. Ovary free, rarely inferior, in the base
of the Sal: y+tube; 2-6-locular; style long; stigma capitate, rarely
• hiscent or indehiscent, coriaceous or membranous, free or
ore or less adnate to base of calyx-tube, 2-6-celled, or by
sorptkm of septa 1-celled. Seeds, numerous, angular, terete, or
wi' S cl; albumen 0; embryo straight; cotyledons usually flat,
sol* etimes convolute.

c% X thin, membranous; low herbs with very small flowers:—[p. 498]
erb, in muddy soil; stems not submerged [p. 498 ......Ammannia.
BENGAL PLANTS.

498

Herbs growing in water; submerged except flower-spike into water. Hydrocharum, with cones.

*Calyx thickly herbaceous or coriaceous; trees or shrubs, often showy flowers:—[p. 497]

Flowers secund; stamens decline; calyx curved beneath; calyx-tube free from ovary. Calyx-tube free from ovary:—

Stamens definite:—

Stamens 4-5, as many as lobes of calyx; petals 4-5, 2-celled, 2-valved. Stamens 8, twice as many as lobes of calyx; petals 4, 4-celled, dehiscing irregularly. Stamens numerous:—

Fruit capsular; seeds free, not imbedded in pulp. Stamens in one row; capsule 4-8-celled; seeds winged. Stamens in two or more rows; capsule 3-6-celled, with a broad wing. Fruit berry-like, 10-15-celled; seeds imbedded in pulp.

Calyx-tube adnate to ovary; stamens in several rows, coriaceous pericarp; seeds pulpy.

342. Ammannia Linn.

Annual glabrous herbs of marshy places; branches often 4-angled; leaves opposite and alternate, sometimes whorled stipules 0. Flowers small, often dimorphic, axillary, solitary, or in terminal spikes, or in small axillary, 3-corymbs; bracteoles under calyx usually 2. Sepals 3-5, inserted on calyx usually 2. Petals 3-5, sometimes obsolete, inserted on calyx-tube between the

Stamens 2-6 or 8, inserted on the calyx-tube. Carpels 2-5, or by absorption of septa 1-celled ovary, enclosed in the calyx-tube; ovules numerous on axial placenta, style filiform, short or long; stigma capitate. Fruit a globular, 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 face.
Flowers in close-set terminal spikes, or axillary solitary; capsule regularly 2-4-valved.

A. psule campanulate, tube longer than broad:—

Ca. psule 4-valved, not very much longer than broad; leaves or-

rotundifolia.

Ca. psule 2-valved, much longer than broad; leaves ovate or elliptic

tennis.

Pi. psule 2-valved, much longer than broad; capsule 2-valved, much longer than

Peploides.

Ca. psule 2-valved; flowers axillary, solitary, not at all spicate;

A. very minute herb. dentelloide.

Ca. fruit hemispheric, tube as broad as or broader than long;

Pygmaea.

Leaves narrowly oblong or elliptic; capsule 3-valved:—

Leaves distinctly pedicelled, distant below, approximated above;

Imijliciicula.

Flowers sessile; a very minute herb. Cal. leaves small, usually approximated on axillary subscape branchlets

Entandera.

Flowers in axillary clusters:—

Leaves narrowly oblong, subcordate at base; stamens some-


Flowers sessile, clusters many-flowered; leaves lanceolate,

Baccicem. xaliciifolia.

Flowers pedicelled, clusters few-(2-5-)flowered; leaves

Cordata.


BENGAL PLANTS.

Flowers in peduncled cymes; leaves elongated, auricled at base; capsule not covered by calyx-teeth. 
Capsule much exceeding calyx-tube. -1 in. long. 
Capsule hardly exceeding calyx-tube, -0.5 in. long. 
Calyx in fruit 4-angled and distinctly 8-ribbed; capsule much exceeding calyx-tube, -1 in. long... 

818. AMMANNIA ROTUNDIPOLIA Ham.; F. I. ii. 425; **ii. 566. 
In all the provinces. 
A common weed in rice-fields and by sides of ditches.

919. AMMANNIA TENUIS Clarke; F. B. I. ii. 567. 
Behar; in wet places. 
A much less common than preceding.

820. AMMANNIA PKPOIDBB Sprang.; F. B. I. ii. 427. 
In all the provinces. 
A common weed in rice-fields and beside ditches.

821. AMMANNIA DENTELLOIDES Kurz; F. B. I. ii. 568. 
Behar, on Parasrath; N. Bengal, common.

822. AMMANNIA PYGMMEA Kurz; F. B. I. ii. 568. 
Chittagong. 
A pygmy weedlet, on wet roadways, &c.

823. AMMANNIA SIMPLICIUSCULA Kurz; F. B. I. ii. 568. 
Chittagong. 
A pygmy weedlet, on wet roadways, &c.

In all the provinces. 
A common weed of rice-fields, roadside ditches, and 0 moist spots.

824/2. Var. ILLECEBROIDES F. B. I. ii. 569. 
ChotaNagpur; Orissa. 
A rice-field weed.

C. and E. Bengal; Chittagong. 
A nee-field weed.

825. AMMANNIA BAC spera Linn.; F. B. L a > 569. 
A. vesicatoria F. I. i. 4-26. 
In all the provinces. 
A common weed of all wet places. Vernac. D'ad * & >
LYTHRACEM.


...char; C. and E. BerIgal; Sundribuns.


343. Hydrolythrum Hook, f.

344. Woodfordia Salisb.
BENGAL PLANTS.

832. Woodfordia floribunda


1-harj Chota Nagpur; N. Bengal.

A shrub or small tree, Mehndi, Henna, or Indian Trivet.

Provinces.

Mehndi, Henna, or Indian Trivet.

Flowers minute, white or yellow, with long, slender racemes; leaves opposite, petioled, pinnate, ovate, connate in a free globular panicle.

**T.** Polygamo-dicous, fat panicles minute. Sepals 5, rarely 4, ovate, connate in a free globe.

**Stamens** 5 or 4, persistent; style long; stigma sub-2-fid. JrVi."7 a globose,
LYTITnACEJR.

2-celled capsule, tipped by the persistent style, opening at the top as to split the style; pedicel in fruit deflexed.

834 Cryptandra pulchula Bl. C. glabra F. B. I. ii. *^-

A tall, erect tree.

347. Lagerstroemia Linn.

Lagerstroemia, or shrubs, to opposite, distichous, or the uppermost opposite, g or ovate. Fruits showy, often large, H with lax, less often dense, ^ T e, te **almonor ringed calyx-tube; lobes ovate, subacute, *'al-

i=te of peduncles; bracts 2 on the pedicels. Sepals, n °*< 7-9, connate in a funnel-shaped, smooth, g *ed, vaf , p alyme of peduncles; bracts on the pedicels.

Sepals, n °*< 7-9, connate in a funnel-shaped, smooth, g *ed, vaf , p alyme of peduncles; bracts on the pedicels.

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835/2. Var. MAJUSCULA F. B. I. ii. 575.

Chota Nagpur; S. Behar.

836. LAGERSTRCEMIA INDI<==A Linn.; F. I. ii« 500 » E. D. L. 52.

Planted in gardens in all the provinces.
A showy shrub. *Vernac. Farash, Telinga*.


Chota Nagpur; Chittagong; often also *Kol. Saikre*; *Santal. Vriya Sekrek*; *Hind. Bakli*, *seina*.
A showy tree. *Vernac. Jarool, KoZ.*

838. LAGERSTRCEMIA MACROCARPA Wall.

Chittagong.
A large tree.

348. Duabanga Ham.

Large trees with drooping, 4-angled branches; *distichous*, large, short-petioled, acute, entire, *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 in 4-8-celled ovary; ovules very numerous, on diffuse covering nearly the whole of the inner walls of the ovary, long, curved; stigma capitate, 4-8-lobed. *Fruit* minute, ellipsoid; testa produced at both ends into tails.

839. DUABANGA SONNERATIOIDES Ham.; F. B. I. ii. 503.

*strcemia grandiflora* F. I. ii. 503.
N. Bengal, Buars; Chittagong.

349. Sonneratia Linn. f.

Glabrous, littoral trees; *leaves* opposite, petiolate, entire. *Flowers* large, solitary axillary, or in threes at end
bracts 0. **Sepals** 4-8, thickly leathery, connate below the calyx; lobes lanceolate, **valvate**. **Stamens** numerous, inserted in a circular tube. **Carpels** many, connate in a many-celled ovary, adnate at its base to the calyx-tube; ovules many, on axial placentas; style long; stigma capitata. **Fruit** a 10-15-celled berry, supported by the persistent calyx. 

**NERATIA ACIDA** Linn. f. & Z. Stem ribbons. A small tree 15 feet high. **Beng. Keora**. A tree 40 feet high. **Punica** Linn. A large shrub; branches terete, often spiny; leaves opposite, subopposite, or clustered, oblong or obovate, obtuse, entire. **Florets** large, orange-red, axillary solitary, or several clustered, connate in a funnel-shaped, coriaceous calyx, below and above produced beyond the ovary; lobes of limb not bright. **Patent.** **Petals** 5-7, lanceolate, wrinkled, inserted between the lobes. **Stamens** numerous, inserted round mouth of calyx, carpellary; 2-scirate, connate in a many-celled, inferior ovary; placentas in some cells axial, in others inferior, style long, bent; stigma capitata. **Fruit** inferior, 8-valved, many-celled berry, with a hard rind, crowned by the persisting calyx-lobes. **Seeds** very many, angular; testa coriaceous, with a thirty pulpy outer coat; cotyledons convolute.

**PUNICA GRANATUM** Linn.; F. I. ii. 499; F. B. I. U. A shrub. **Hind. Anar, darim I Beng. and Urtya Dalim.**
Order LYII. ONAGRACEÆ.

Annual or perennial herbs, sometimes aquatic; rarely i
Leaves opposite or alternate, entire or toothed, rarely (in aquatic species) the submerged leaves much divided; stigmas 1

Flowers hermaphrodite, regular or slightly irregular, solitary, rarely spiked or racemized at ends of branched epigynous, lining calyx-tube. Sepals connate in a tube around ovary, produced beyond ovary in a valvate 2-5-lobe

Petals 2-5, alternate with lobes of calyx, rarely 0. Stamens to rarely 5, 6, or 12, 1-2-seriately attached along with petals, and disk, sometimes one series imperfect; filaments filiform or disk, sometimes times decline; anthers dorsifixed; dehiscence longer, introrse. Ovary inferior, rarely half-inferior, 1-6-loculed; usually 4-locular, or 1-locular from absorption of sep-i-par

filiform, entire; stigma capitate, entire or 4-lobed or rarely 0, ovules usually anatropous, solitary, or numerous 1-seri

numerous many-seriate. Fruit dehiscent capsular, usually 4-6-celled, and 8-12-ribbed capsule; dehiscence sep-

the rib's persistent, or irregular between the ribs. Seeds nuin

testa hard or spongy; cotyledons obtuse.

351. Jussiaea Linn.

Herbs or undershrubs, marsh or aquatic; leaves opposite, brachycaulous, yellow or white. Sepals 4-6, connate in calyx-tube, hardly produced beyond ovary; lobes of calyx persistent. Petals 4-6, epigynous. Stamens 8, filaments usually 2 at apex of pedicel. Sepals 4-6, connate in an inferior 4-6-ceu

ovules many, several-seriately on vertical axial placenta, simple, usually short, stigma 4-6-lobed. Fruit a linear,

jelled 4-6-celled, and 8-12-ribbed capsule; dehiscence sep-

the rib's persistent, or irregular between the ribs. Seeds nuin
testa hard or spongy; cotyledons obtuse.
OXAGIUCE.E.

Lea repens Linn., F. I. i. 401; F. B. L ii. 587.

352. Ludwigia Linn.

Herbs; alternate, undivided, subentire. Fbwm usually axillary, sessile or pedunculate, persistent.
Sepals 4-5, usually sessile or slightly subequal; bracteoles 4-5, sessile.
Stamens 4-5, united, consisted in an inferior, 4-5-celled, ovary, with style and ovules numerous, sepalate or several-senate ovary.
Capsule inflated, or not inflated, torulose, opening by terminal pores or rupturing irregularly along the sides. Seed, many, obovoid, smooth.

353. Trapa Linn.

Fruits or seeds in many rows in each cell; showing themselves Prominently through its walls.

354. Ludwigia PAKVILLOBA Uoxb.; F. I. i. 419; F. B. I. ii. 588.
^ W. Bengal; Behar; Chota Nagpur.

^ A Prostrate or decumbent herb, in rice-fields.

^ N. and E. Bengal.

^ A Prostrate or decumbent herb, in rice-fields.

356. Trapa Linn.

Floating herbs; ^* dimorphic submerged, with a short tube in the base of the leaves, penartent, 2 or all bean-like.

841 J.\(*\) LEA REPENS LINN. F. I. i. 401; F. B. L ii. 587.
A herb, creeping in mud on margins of tanks and floating
PLANTS.

Fruit: Fleshy, 4 small, white, inserted on the epigynous disk. Stamens 4. Carpels 2, connate in a 2-celled ovary; ovule solitary in each cell, pendulous at top of inner angle; style subulate; stigma capitate.

Obovoid, bony nut, with 4 prominent angles, 2 or all of spinescent; apical, cylindrical beak perforate for protrusion of radicle. Seed solitary, inverted; cotyledons very unequally divided in front.

Leaves very villous beneath, 2 in. long, 3 in. wide, faintly equal.

Leaves slightly villous beneath, 5 in. long, 75 in. wide, incised in front.


In all the provinces.


847/2. Var. INCISA F. B. I. ii. 590.

Chota Nagpur.

A floating aquatic.

Order LYIII. SAMYDAEJE.

Trees or shrubs. Leaves alternate, often distichous, simple, entire or slightly serrate, often linear-punctulate beneath; stomata small, deciduous. Flowers regular, usually hermaphrodite, small, axillary, short-pedicelled, fascicled, or less often in racemes, in pamoles. Disk perigynous or hypogynous, annular, or 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, or rarely 0. Stamens few or numerous, in a tube, or connate in bundles opposite the petals; anthers didymous or oblong; dehiscence longitudinal, either introrse or oblong; ovary superior or half-superior, with stigmas 2-5, or rarely styles 8; ovules many or few on usually a panental placenta. Fruit a loculicidal, 2-5-valved.
**SAMYIJACE**.


354. Casearia Jacq.

Shrubs or small trees; have simple, alternate, distichous, entire or slightly serrate, minutely linear-punctate leaves. Stipules small, lateral, caducous. Flowers small, yellow, axillary, fascicled; pedicels short, jointed; bracts scale-like, numerous. Sepals 4-5, connate below, imbricate, persistent. Petals 0. Stamens 8-10, connate below in a globose, 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; style* simple; stigma capitate or 8-fid. Fruit succulent, globose or ellipsoid, smooth or 3-angled or 6-ribbed, opening by 3, 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.

Wess oblong, closely serrate, softly hairy beneath. Vareca.

Cases elliptic-oblong to lanceolate, crenate, pubescent, or glabrous except midrib and petiole, beneath. tomentum.

848. CASEARIA OBAVKOLBN8 Dalz.; F. B. I. ii. 592; E. D. C. 722.

Behar; Chota Nagpur.

A shrub or small tree. Hind. Chilla, pimpri; Kol. lian; Santal.

849. CASEARIA VARECA Roxb.; F. I. ii. 418; F. B. I. H. 593.

Tippera; Chittagong.

A shrub.

850. (USEARIA TOMRHTOBA Boxb.; P. I. * 421; F. B. 1.11. A; E. D. c. 725.

In all the provinces. 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, d. or sessile, rarely punctulabe. Flowers small, pubescent.
in slender axillary and subterminal racemes or panicles, base of pedicels often prominent, caducous. 5-7, connate in a funnel-shaped calyx-tube, adnate to base of narrow, persistent. Petals 4-8, inserted in the calyx, linear-oblong, persistent. Stamens 4, adnate to the calyx, linear-oblong, persistent. Ovary 2-5, connate in a half-superior, 1-celled ovary; styles 2-5, filiform; stigmas capitate. Seeds few, angular or oblong.


Chittagong.
A tree.

Order LIX. Turneraceae.

Herbs or shrubs. Leaves alternate, entire or pinnately serrate, often 2-glandular at the base; stipules 2-bracteolate. Flowers regular, hermaphrodite, axillary solitary, or racemose; peduncles free or adnate to petiole, often 2-bracteolate. Disk lining calyx-tube. Sepals a tubular, 5-fid, deciduous calyx with imbricate lobes, inserted in throat of calyx-tube, clawed, membranous, sometimes with a fimbriate scale. Stamens 5, inserted 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 2-seriate on 3 parietal placentas. Fruit a capsule, 3-valved at the top or throughout; valves bear 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, entire, serrate or pinnately lobed, usually 2-glandular at base; small or 0. Flowers axillary, solitary, rarely fascicled racemes, yellow, peduncle sometimes adnate to petiole;
PASSIFLOREAZ.

Sepals 5, connate in a canipanulate or narrow calyx; petals 5, with a style or sometimes<br> <3" the same length; stamens 5, inserted on the calyx below<br> the petals, hypogynous; carpels 3, sessile, flanged; seeds many, 2-seriate on 3 parietal<br> stigmas, or more-fid. Fruit an ovoid or oblong,<br> capsule, opening completely by 3 valves. Bieds confined to centre of placentas, oblong or cylindric,<br> Turner A ULMIFOLIA Linn.<br> In most of the provinces; an escape from gardens.<br> An under shrub.<br> <br>Order LX. PASSIFLOREJE.<br> <br>Herbs, almost always twining or climbing. Leaves<br> opposite, simple or 1"bed, penninerved or palminerved, often<br> or 1"bed, penninerved or palminerved, often<br> petiole often glandular; stipules 2, deciduous<br> or 1"bed, penninerved or palminerved, often<br> leaves persistent, sometimes 0; tendrils axillary or 0. Flowers<br> regular or 1-sexual; usually 3-bracteolate, with brac-<br> cymose, with sometimes one or more of the<br> bractlets transformed as a tendril, rarely flowers solitary. Disk<br> annular or split into staminode-like glands, rarely 0.<br> Sepals 5, connate in a calyx with tube, membranous or fleshy, imbricate, marcescent;<br> ovary above the disk usually present. Stamens 5, adnate to a<br> gynophore or free at the base, perigynous; anthers oblong.<br> Ovaries 3, cylindrical, 1-locular with 3 parietal placentas, in s flowers rudimentary; stigmas<br> reniform, capitate or eroded; ovules numerous, anatropous, pendulous. Fruit a<br> capsule, opening completely by 3 valves. Seeds many, ovoid or flattened, with a fleshy<br> aril, with usually leafy cotyledons.
Flowers hermaphrodite; corona of corolla conspicuous, herbs.

Flowers unisexual; corona of corolla small or none:
  Male and female corollas similar; tendril-bearing herbs
  Male and female corollas dissimilar; erect trees with soft

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. Flowers
  cymose; bracteoles 3, alternate. Sepals 5, conn
  calyx-tube; lobes of limb linear. Petals 5, f
  corolla, throat; with corona of slender filaments within
  springs from throat of calyx and from one or mo
c  folds lower down, and with a basilar, membranous cup
  the base of a distinct gynandrophone. Stamens
  from apex of gynandrophone; filaments flat; an
  dorsifixed. Carpels 3, connate in a one-celled ovar
  the gynandrophone; ovules numerous; styles 3; stig
  capitate. Fruit a fleshy berry. Seeds many, rarely

Flowers small, without petals; bracts none, or if present no
  involucre under the flower.

Flowers large, showy; bracts 3, forming an involucre under the

  Leaflets of the involucre finely pinnatifid, the ultimate
  sec ted, setaceous
  Leaflets of the involucre entire or toothed:
  Branches terete; stipules large, foliaceous
  Branches quadrangular, faintly winged along the cornel

853. PASSIFLORA SUBEROSA Linn. ; F. B. I. ii. 599.
  C. and E. Bengal; Sundribuns; Chittagong.
  A herb climbing in hedges and thickets; a native of America, but quite naturalised.

1854. PASSIFLORA FCETIDA Linn. ; F. B. I. ii. 599.
  C. Bengal; Chittagong.
  A climbing slender shrub in hedges near village
PASSIFLOREM.

85. PASSIFLORA ADENOPHYLLA Mast.
N. Bengal, naturalised.
A garden escape.

86. PASSIFLORA QUADRANGULARIS Linn.
N. Bengal, naturalised.
A garden escape.

358. MODECCA Lamk.

...rowing herbs or undershrubs, with simple lateral tendrils;
ting, entire or palmately lobed, usually with 2 or more flat,
>cular glands on the under-surface, and with similar glands at
jyex of petiole; stipules inconspicuous or 0. Flowers monoecious,
or many-flowered axillary cymes, the peduncles long, one
more being sterile and converted into tendrils. Sepals 5,
connate in a tubular or campanulate calyx-tube; lobes of limb
embracate, coriaceous. Petals 5, free, membranous, 1-nerved,
serted on calyx-tube, those of ? rather smaller. Corona 0 or
oped to a fimbriate ring. Stamens 5, inserted at base of
x-tube, opposite as many scales or glands; filaments linear,
late, connate below or quite free; anthers basifixed, the con-
tive often mucronate; rudimentary ovary very small or 0.
Stamiiodes 5, connate below in a cup round base of ovary,
Posite as many ligulate, capitate glands. Carpels 3, connate in
 globose or elliptic, sessile or stalked, round or angled, 1-celled
ary; ovules many on parietal placentas; style cylindric, short,
I stigmas 3, capitate or flattened and dilated. Fruit a fleshy
coriaceous, 3-valved capsule. Seeds many, ovate, compressed,
late, with long funicles; albumen fleshy.

359. CARICA Linn.

Treess or-shrubs, with spongy stems and milky juice; leaves
arge, flaccid, long-petioled, palmately lobed, subpeltate'; stipules
. Flowers whitish, dioecious, the male laxly panicked, the female
icled. Sepals 5, connate' in a small, campanulate calyx. - 3
Petals 5, connate in a salver-shaped corolla with elongated, slender
lobe, lobes oblong or linear, valvate or contorted. Stamens 10, 
inserted on the corolla-throat; anthers 2-seriate, adnate; 5 on
short filaments, alternate with corolla-lobes, 5 se

corolla-lobes; dehiscence introrse, connective US'UF

Ovary reduced to a subulate process. ? Petals oblong, erect, deciduous. Stamvnodes 0. Carp sessile, 1-celled ovary; ovules many, several

placentas; style short or 0, stigmas 5, lin

or lobed. Fruit a large, fleshy, some?, hat furrowed

berry. Seeds ovoid, with an adnate arillus; albumen

858. CARICA PAPAYA Linn.; F. I. iii. 824; F. B. I. u.

C. 581.

Generally cultivated and often subspontaneous

An erect small tree; native of America. Vern (from the American name). The Papaw.

Order LXI. CUCURBITACE^.

Herbs or shrubs, climbing by means of solitary

simple or divided tendrils. Leaves alternate, petiole date, simple, lobed or pedately divided; stipules.^

Fowers regular, 1-sexual, monoecious or dioecious, usua y or rarely racemose or subumbellate, often solitary, usually white. Dish 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 fimbria e valvate or involute in bud. Stamens inserted at the the middle or at base of calyx-tube, usually 3, ^ and anthers free or connate in a tube, usually one 1-celled, 2-celled, cells straight or flexuous or conduplicate, the sometimes produced; dehiscence longitudinal or in cur 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 usual or horizontal, rarely pendulous, sometimes few, pendulous, 2-seriate on 3 vertical, parietal, or partially or completely in 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
Preceded, horizontal, or pendulous; testa often with corrugate or
sinose margins; albumen 0; embryo with leafy cotyledons.

Anthers 2-celled; ovules horizontal or very rarely pendulous; female
flowers usually solitary, never panicled; leaves never divided into dis-
tinct leaflets.—[p. 516]

Anther-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 almost pendulous and seeds very numerous; tube of
calyx less than 3 in. long..........................Trichos

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
exserted, recurved; anthers free:—

Fruit dry; endocarp fibrous, opening by a stopple
male flowers partly in racemes.............................

Fruit soft; endocarp fleshy, indehiscent; a female
flower, alike solitary.................................Trilobium.

Stamens inserted below the mouth of the calyx,^t
hardly exserted, not recurved; anthers more

Connective produced beyond anther-cells; tendrils simple
Cucumis.

Connective not produced; tendrils 2-3-fid.....C

Corolla campanulate, not divided much more than 1
BENGAL PLANTS.

Flowers white; tendrils simple............................................. Cephalandra
Flowers yellow; tendrils 2-3-cleft........................................ rbita.
Anther-cells straight, or, if curved (Bryan), not 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................................................................. Mukuia.
Tendrils 2-fid................................................................. B. 0111

Male flowers in corymbs, umbels, or racemes :
Connective produced; fruits on capillary pedicels ; m** flowers
usually racemose............................................................... Melothria.
Connective not produced; fruits on short pedicels;
usually corymbose or subumbellate........................................

Anthers 1-celled, cells straight; stamens always free; ovules red
pendulous; flowers small, the female ones in panicles or many-flowered
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*
Petioled; tendrils 2-3-fid. Flowers large, dicous; male long racemes; bracts olling, entire; female flowers solitary. 3. 5,
connate in a long tube, with shortly cawpanulate mouth; V> short, Petal 5, connate at the base only, margins very nmbnate. * 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 panetal, but only near base, each 2-seriately 4-ovuled; styk "
Stigmas 3, oblong, bifid, exserted. Fruit a large, depress... S
Zooved hard berr. V- 8 VS TMTM. 6, pefect> j well,
laterally attached.

H O B ^ H ook. f. & Thoms.; B. L. ii. 606.
Chittagong.
An enormous climber stcin smaus 100feet long.
361. *Trichosanthes* Linn.

Herbaceous climbers; leaves entire or palmately lobed, denticulate; tepals usually 2-5-fid. K « « dteecious, less: ° « «\(^{\circ}\) onoeoious white; male peduncles usually in axillary \(\text{pam},^{\circ}\) mal \(\text{e} \text{mose, the other 1-flowered, caducous; bracts large or small}^{\circ}\) ; female flowers solitary. Sepal* 5, con\(\text{M}\) te m > K ^ B; */(im\(\text{b},\) lanceo\(\text{iare, entire or serrate or ta}\text{d\(\text{i\(\text{a}\)}}\)e}. Pet... 5

innate at the base, margins kgm-fimbriate. * St\(\text{amen}^{\text{s}}\) * dioica; jnthe*, narrow-linear, subinclined, connate, rarely (\(\text{T}\) \(\text{ee. two 2-celled, one 1-celled, cells conduplicate.} \) **ovules
innate in an inferior 1-celled ovary at base of caly*-tube or, **ny, horizontal, on 3 parietal placentas; style filiform; stigmaf\(\text{cc} \) » P « 3-fid or 6-fid. Fruit a lanceolate or globose, smooth, acute
\(\text{obtuse berry.} \) Seeds many, horizontal, embedded in pmp. ellip\(\text{i}^{\text{d}}\) d; margins sometimes angled.

B. acts of the male flowers small or none;—

Leaves, cordate-oblong, acute, sinuate-dentate, but not anglea
\(\text{t}^{\text{m}}\) A or

\(\text{d}\) changes, harsh, anthers in male flowers free; both male peduncles, a\(\text{d}^{\text{a}}\) rule only 1-flowered. 

leaves subeniform-cordate, usually 5-, sometimes 3-7-lobed

\(\text{P}\) \(\text{bberulosa or pubescent; anthers in male flowers connate, male peduncle (sometimes replaced by a female) 1-flowered, facereoa,} \)

\(\text{f}\) Bracts of the male flowers large, wide-based, and ^\(\text{fies cent})

\(\text{a}\) Bracts ovate or obovate, lacerate or deeply serrate. lea ~ P oc\(\text{cassionally}

\(\text{a}\) Bracts ovate or obovate, entire or faintly serrate; leaves co

\(\text{a}\) o\(\text{b}\) (occasionally) faintly angled, always hairy beneath


In all the provinces.

A rather expensive climber. Hind. Palwal; B\(\text{V} \) ^

*Uriya Fatal.*
861. **TRICHOSANTHES CUCUMBRINA** Linn.; F. I. ii. 609; E. D. T. 576.

In all the provinces; sometimes cultivated. A considerable climber. **Beng. Ban-chichinga**

Jangli chachinda.

662. **TRICHOSANTHES ANGUINA** Linn.; F. I. ii. 610; E. D. T. 569.

Cultivated fairly generally. A considerable climber. **Hind. Chachinda; Beng. Bhoi-kamra.**

663. **TRICHOSANTHES PALMATA** Roxb.; F. I. ii. 606; E. D. T. 600.

In all the provinces. A large climber, stems often 30 feet long. **Indrayan; Beng. Makal.**


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 white, large, dioecious or occasionally monoecious; male peduncle fully developed individuals 2 from each axil, the earlier l-flowered later long racemose, one or other often suppressed; racemous flowers large, incised, or small lanceolate; female now solitary, usually in separate axils if not on separate individuals. Sepals 5, connate in a long calyx-tube, contracted under the inflorescence. Petals 5, margins not fimbriate. Anthers included, connate, elongate, one 1-celled, two 2-celled; <conduplicate. Ovary represented by 1 or 3 small linear processes. Carols 3, connate in an oblong, 1-celled ovary; ovules numerous, on 3 long vertical placentas; style long; stigmas short. Fruit an ovate-oblong berry with acute tip and compressed seed.

865. **GYMNOPELALUM COCHINCHINENSE** Kurz; F. B. I. & ii. 711.

**Mommonhca tubiflora** Fisch. 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 females with short peduncles. Sepals 5, connate in a funnel-shaped subcampanulate tube; lobes of limb narrow. Petals 5, obovate, free. Stamens 3; anthers connate, included, one 2-celled, cells conduplicate. Carpels 3, connate in oblong, 1-celled ovary; ovules many, horizontal, on 3 vertical placentas; style short, with three 2-fid, stigmatic lobes. Fruit a thickly coriaceous or almost woody polymorphous berry, usually broader upwards. Seeds numerous, horizontal, smooth.

LAGENARIA VULGARIS Ser.; F. B. I. ii. 613; E. D. L. 30.

Cucurbita Lagenaria F. I. iii. 718.

Cultivated generally.


364. Luffa Cav.

Large or small climbers; leaves cordate, usually 5-angled or petiole not glandular at apex; tendrils 2-5-fid. Flowers male, yellow or white; males on long or short racemes or axillary, solitary or panicked, both sexes often from same short pedicels. Male pedicels axillary, clustered, without bracts; fruit small, 2 in. long, oblong, covered with papill®, obscurely 10-stiitate...<raveolens.

Pedicels racemed on long peduncles, each with usually a small, ovate, viscid bract; fruit large, clavate, 5-12 in. long, smooth, dis-tinctly 10-angled or 10-ribbed. <cypeyiaca.
BENGAL PLANTS.

ii. 614-

Male flowers with only 3 stamens:

Fruit medium, 3-4 in. long, 10-angled for 10-ribbed.
Fruit clavate, rather prominently 10-angled; endocarp jutt-bland, edible; leaves green benzjilt.
Fruit oblong, 10-ribbed; endocarp acrid, spiny; leaves pale beneath.
Fruit small, under 1-5 in. long, obsS\tstriate, densely bristly.

867. LUFFA GRAVEOLENS Roxb.; F. I. iii. 716; F. B. I. N. Bengal; E. Bengal; Behar; Chota Nagpur.
- A climber.

- Generally cultivated, but also as if wild in raos.
- A very large climber. Hind. Ghia-taroi; Beng.-

- Generally cultivated, but also as if wild in E.

- Chota Nagpur; Ori. A
- A rather extensive little-branched climber.
- Karui-taroi; Beng. Tita-jhinga.

871. LUFFA ECHINATA Roxb.; F. I. iii. 716; F. B. I. L. 574.
- N. and E. Bengal; Tirhut.

365. Benincasa Savi.

A large, softly hairy climber; leaves cordate, renifonn, orbicul more or less 5-lobed; petiole without glands. Floors yellow, monoecious, all solitary; bracts 0. Sepals 5, campanulate tube below, free, leaf-like, and serrate above.

..., slightly connate at the base, obovate. * Stamens 3, in near mouth of calyx-tube; anthers exserted, one 1-oedBed. **
Momordica.]  

CUCImiUTACEJS.  

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Carpels 3, connate in an oblong, densely ovary; ovules numerous, horizontal, on 3 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.

Momordica]  

Climbers; leaves cordate, entire, petioled; tendrils solitary.  Ovules yellow or white, monoecious or dioecious; males or racemose; bracts large, small, or 0; females peduncled, ovaries connate in a short campanulate calyx-tube; petals 5, connate in a short, campanulate calyx-tube; 

Petals 5, shortly connate below.  Cylindras 3, stamens short; anthers ultimately free, one 1-celled, ovule 1-celled ovary; ovules numerous, horizontal, on 3 vertical placentas; style long, or nearly middle of slender male peduncle; fruit densely covered with soft spines; seeds 25 in. 

White; fruit muricatated or rarely horseshoe-shaped; seeds 1 in. long....  yochnincheHKi*.

ORDICA 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.


In all the provinces.

A climber.  SantaL Kanchan-arnk'.
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**BENGAL PLANTS.**

875. **MOMORDICA COCHINCHINENSIS** Spreng.; F. B. I. 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 petately lobed or entire, dentate or serrate; tendrils B. *F. B.* I. 875.

Flowers yellow, monoecious, all short-peduncled, axillary; males fascicled, the females solitary. *Sepals* 5, connate in a campanulate calyx-tube; lobes small. *Petals* 5. below in a campanulate tube; lobes oblong or ovate, acute.

*Stamens* 3; anthers free, one 1-celled, two 2-celled; cells flagellate or conduplicate, connective crested. *C.quef* 3, connate into a 3-lobed ovary; ovules many, horizontal, on 3 vertical styles; stigmas 3, obtuse. *Fruit* a large or small, spiny or elongated, smooth or tuberculate berry. *Seeds* very oblong, compressed, usually smooth.

Leaves more or less harshly scabrid; fruit not tuberculate:

Leaves usually rather deeply 5-lobed, sometimes hardly 5-lobed: fruit faintly, decided 3-sided, usually oblong-stippled, ellipsoid; root capable of persisting for more than a season; not cultivated, fruit very rarely eaten.

Leaves faintly 5-lobed, or if deeply lobed the lobes not acute, soft hairy as well as scabrid; fruit not at all 3-sided, variously ovoid, elongated, or contorted; root annual; always cultivated.

Leaves hispidulous, sometimes also softly hairy; fruit not scabrid. 5-angled or slightly 5-lobed, the lobes acute; fruit almost always cyphiid; root annual; always cultivated.

876. **Cwmni8 TBKMTBOB** Boxb.; F. I. iii. 722; F. B. I. 689.

*E. V. D. C.* 2298. **O. tzcrbinatus** 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. I. m 720; F. B. L. 620. E. P.

C. **C. utilisminus** F. I. iii. 721.

Cultivated in all the provinces.
Cucumis sativus

An annual climber or creeper. Vernac. Karbuz (the Sweet); Kakri (the Vegetable). The Melon.

Cultivated in some of the provinces.
An annual climber or creeper. Hind, Khira; Beng. basa, thriyow; Telugu Kakri.

368. Citrullus Schrad.
Herbaceous climbers, hispid or scabrous; leaves petioled, palmately lobed, with usually narrow, sinuate-pinnatifid segments, betimes lobes small; tendrils 2-3-fid. Flowers monoeious, all solitary, rather large. Sepals 5, connate in a campanulate calyx-tube. Petals 5, connate half-way up in a campanulate corolla.

*Stamens 3; anthers scarcely connate, 1-celled, two 2-celled; cells conduplicate, connective not produced.
*Carpels 3, connate in an oblong, 1-celled ovary; ovules many, horizontal, on 3 vertical placentas; style short; stigmas 3, iiform.
Fruit a large, globose or ellipsoid, smooth, fleshy berry.

Citrullus vulgaris Schrad.; F. B. I. ii. 621; E. D. C. 1221.
Cucurbita Citrullus F. I. iii. 719.
Cultivated throughout our area.

369. Cephalandra Schrad.
Herbaceous climbers; leaves petioled, palmately lobed or angled, thead; tendrils simple. Flowers dioecious, rather large, solitary, acte; 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 exserted, connate, or 1-celled, two 2-celled; cells conduplicate. Carpels 3, connate 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.

Momordica monadelphia F. I. iii. 708.
In all the provinces.
370. *Cucurbita* Linn.

Large, climbing, hispid or hairy herbs; *leaves* ovate, angled or lobed; tendrils 2-4-fid. *Flowers* solitary, yellow, very large. *Sepals* 5, connate in a calyx-tube; lobes of limb linear of leafy. *Petals* 5, & campanulate corolla; lobes short, triangular. *Calyx*-lobes 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 style short; stigmas 3, bifid. *Fruit* a fleshy berry* Seeds* ovoid or oblong, compressed, margined or not.

Leaf-stalks beset beneath with rigid, pungent hairs; *calyx*-lobes subulate; *leaves* deeply 5-lobed, with broad sinuses between the lobes narrow...

Leaf-stalks with hairs equal both beneath and above, no pungent:

- Calyx-lobes narrow-subulate; *leaves* not deeply lobed, *Beng. & kaddu. The Pumpkin.*

881. *Cucurbita pepo* DC.; *F. I. iii. 718; F?B. L "." C. 2331.

Cultivated in our area.

'An annual creeper or climber. *Beng. & kaddu. The Pumpkin.*

882. *Cucurbita maxima* Duchesne; *F. B. I. "." C. 2316.

Cultivated in our area.

An annual creeper or climber. *Vernac Mitha-kaddu. The Gourd.*


Cultivated in our area.

An annual creeper or climber. *Bemj. Safra The Musk-Melon.*

371. *Thladiantha IJunge.*

Herbaceous climbers; *leaves* petioled, deep-cordate, 3-lobed, denticulate; tendrils simple, rarely 2-fid.
CUCUKBITACEAE:

dLAcious, yellow, small or large; male peduncles in fully developed
maividuals paired, one. 1-flowered, caducous, without bract, one
kerned, with-bracts distinct or obsolete; female peduncle elong-
gated, 1-flowered, bract 0. Sepals 5, connate in a shortly campanu-
la^ca
cyx-tube occluded by a horizontal scale; lobes lanceolate.

Sepals 5, connate below in a campanulate tube, upper half of
Petals free, revolute. j Stamens 5, four approximated in 2 pairs;
Nauents free, subulate ; anthers straight, narrow, oblong, 1-celled.

? Carpels 3, connate in an oblong ovary; ovules many, hori-
tal, on 3 vertical placentas ; style deeply 3-fid, with 3 reniform
8mas. Fruit an ellipsoid, obtuse, green, subcylindric, vertically
verry. Seeds many, small, obovoid, compressed, smooth.

THLADIANTHA CALCARATA C. B. Clarke. T. duhia F. B. I.
ii. 631.
E. Bengal; Chittagong.
A large climber.

372. Mukia Arn.

**erbaceous,*scabrid climbers; leaves palmately nerved, cordate,
Agled but not deeply lobed, petioled and sessile on same indi-
Vial; tendrils simple. Flowers small, yellow, monoecious, in
Hilary clusters; males short-peduncled, females sessile in same
Xl- Sepals 5, connate in a campanulate calyx ; lobes subulate.
retah 5, connate in a 5-partite corolla. 6 Stamens 3, inserted
P in the calyx-tube; anthers free, two 2-celled, one 1-celled;
straight, connective not produced. ? Carpels 2 or 3, con-
in a 1-celled, ovoid, hispid ovary, with an annular disk;
ew, horizontal, on 2-3 vertical placentas ; style thick, its
P^X with 2-3 stigmatic lobes. Fruit a small, globose berry.

MUKIA SCABRELLA Arn.; F. B. I. ii. 623; E. D. M. 791.

Bryonia scabrella F. I. iii. 724.

* In all the provinces.

373. Bryonia Linn.

herbaceous climbers; leaves petioled, palmately lobed or
ft*gled; tendrils 2-fid. Flowers small, yellowish, monoecious;
Ales and females clustered, short-pedicelled, in same axil. Sepals
£ connate in a widely campanulate calyx; lobes of limb small.
let*Is 5, connate in a 5-partite corolla. 8 Stamens 3, m-
sserted deep in the calyx-tube; antlx
2-celled; cells curved or sigmoid, not coaduplicate, co
2-celled; cells curved or sigmoid, not c
produced. ? Carpels 3, connate in an ovoia, J-
3-fid at the apex. Fruit a globose ov. Seeds ra
oblong or ovoid, compressed.

886. BRYONIA Laciniosa Linn.; F. 1. iii-
E. D. B. 904.
In all the provinces.
A slender, nearly glabrous climber, H
Beng. Mala.

374. Melothria Linn.
Herbaceous climbers; leaves deltoid, truncate or has a
or 3-lobed, often punctate, petioled; tendrils simple
Flovers small, white, monoecious or, rarely, dioecious,
females often in the same axil; male pedicels long,
variably sub solitary, or racemed on leafless branches;
Petals 5, connate in a short calyx-tube; male pedicelled.
Fruit a globose ovary. Seeds numerous, small, oblong, much compressed,

Male flowers clustered in the leaf-axils; fruit ellipsoid, pointe
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 ................

887. MELOTHRIA INDICA Lour.; F. B. I. ii.
E. Bengal; Chittagong.
A slender climber.

888. MELOTHRIA LEUCOCARPA Cogn. M. odorata F. B. I-
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 officinal subcorymbose; bracts small or obsolete. Sepals 5, connate to a tubular calyx; lobes of limb small. Petals 5, triangular, connate only at the base. Stamens 3, inserted deep in the calyx-tube. Filaments glabrous or pubescent; anthers free, all 2-celled, two 2-celled and one 1-celled; cells curved or sigmoid, connate on 3 vertical placentas; style cylindric, its base surrounded by an amicral disk, its stigmatic apex 3-lobed. Fruit a globose, ellipsoid, or cylindric succulent berry.

Z. hookeriana. Leaf petiole longer than the auricles at base of leaf-blade; fruit globose, biculate, rugose when dry. Z. umbellata. Leaf petiole usually shorter than the auricles; fruit cylindric, not rugose.

W.- ZEHNERIA HOOKBRIANA Am.; F. B. I. ii. 624.
Chittagong. A weak climber.

In every province.

376. Actinostemma Griff.
A weak herbaceous climber; leaves petioled, deep-cordate or astate, elongate, much-toothed; tendrils simple and simple-notice. Flowers small, monoecious, in lax axillary panicles, mostly male, females few near the base of the peduncle. Sepals 5, connate to a small, rotate calyx; lobes linear-lanceolate. Petals 5, caudate-lanceolate, connate at the base. Stamens 5, free, their connectives dilated, papillose on one side, with a straight, oblong, single Ather. cell on the other. Carpels 2, connate in a subglobose,
verrucose, 1-celled ovary; ovules 2 or 4, pendulous; style short, plerotic placentas near apex of ovary; style short.

Fruit a small, ovoid-cylindrical, half-supercilious above the middle, covered with rough points, circumscissile above the middle.

Seed 2-4, ovate, corrugated and denticulate on the margin.

891. ACTINOSTEMMA TENERUM Griff.; F. B. I. ii. 668.

E. Bengal.

A weak climber.


A herbaceous climber; leaves pedate, segments 1-2 ovate, lanceolate, serrate; tendrils simple. Flowers in a short greenish, in diffuse axillary panicles. Sepals 5, connate in a short tube; lobes small. Petals 5, connate in a rotate coral annular, lanceolate. Stamens 5; filaments connate 2-celled; cells long, straight. Carpels 2-3, connate in a false inferior 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.


N. Bengal, in the Duars.

A slender climber.

Order LXII. BEGONIACEAÉ-

Herbs or undershrubs, usually succulent; stem often a cipering rhizome or corm. Leaves alternate, rarely pinnatifid, more or less inequilateral, lobed or toothed or entire, free, often deciduous. Flowers unsymmetrical, 1-sexual, on axillary, dichotomiously cymosely divided branchlets, and basal bracts usually opposite; geneia white, rose or yellow, sometimes small. Disk 0. Sepals usually 1-4 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 obvoid, 2-celled; cells adnate; dehiscence long introrse. Perianth of 2-6 segments. Ovary inferior or 1-locular, usually 3-locular and 3-cornered or 2-locular and intruded into loculins; styles 2-4, free or connate below; stigmas branched...
ovules numerous, often covering the whole placental surface, anatropous. Fruit a loculicidal, rarely septicidal, or Regularly rupturing capsule, less often succulent, often winged. Numerous, minute, globose or narrowly cylindric; testa reticulate; albumen scanty or 0; embryo obovoid or subcylindrical minute cotyledons.

378. Begonia Linn.

Herbs, rarely shrubs; leaves unequal-sided, entire or lobed, Regularly toothed. Flowers often showy, monoecious. Perianth of 2 outer sepaloid and 2 inner petaloid segments, rarely e, very rarely 0. Stamens many; filaments free or monadelphous, usually of 5 segments, the 2 outer rather hairier and sepaloid. Carpels usually 3, rarely 2 or 4-5, connate in a 2-5-locular ovary; styles usually as many as the ovarian cells free or connate at the base, 2-fid at apex, with entire or Seised lobes; ovules on axial, rarely on parietal placentas. All 3-cornered or unequally 3-winged capsule, rarely round. Wangled, sometimes berry-like, 2-5-locular; dehiscence septicidal or loculicidal, partial or complete, occasionally irregular. Many, small.

S. 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. Datiscáceae.

Trees or herbs. Leaves petioled, simple or pinnate; stipules 0. Flowers small, diceious, rarely 2-sexual or polygamous, in cymose, racemes, or panicles. Sepals connate in a small calyx, *ith short tube and 3-9 equal or unequal teeth. Petals a Stamens 4-more, opposite the calyx-lobes; filaments shoxt-taughtered, dehiscence longitudinal, lateral, or extrorsile; rud.

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Begonia.]
BENGAL PLANTS.

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379. Tetrameles B.Br.

A large tree; leaves petioled, ovate, more or less pubescent beneath. Flowers dioecious, appearing before the panicked; females racemose; clustered near ends of leaves; males f branchlets, sometimes opposite the female. Sepals 4, ovate, connate in a campanulate tube, accessory lobes present. Petals 0. Stamens 4, calyx-lobes, inserted round a depressed disk, within which is occasionally a quadrangular rudimentary ovary. Capsules 4, connate in an ovoid calyx-tube with short lobes. Petals 0. Cones in a 4-lobed ovary with intruded apex; ovules on 4 parietal placentas; styles 4, short; stigmas simple, simple. Fruit a small, ovoid, faintly 4-ridged, membranous capsule, opening at the apex between the styles. Seeds minute, flattened, ellipsoid, with a loose, lax, reticulate testa.


N. Bengal, Duars; Chittagong. A lofty tree, 100-150 feet high. Vernac. ban maina-kát.

Order LXIV. CACTACEÆ.

Herbs, shrubs, or trees, with usually succulent stems, often thickened, striated or angled. Leaves usually represented by tufts of spines or by prickles or small tubercles. Flowers regular, hermaphrodite, solitary. Sepals united, calyx, with tube adnate to ovary and with 3-many lobes. Petals many, free or shortly connate below, inserted. Stamens numerous, free, or adnate to the base of the ovary, filaments filiform; anthers small, oblong, dehiscing in front. free or embedded in the stem, 1-locular; placentas many, parietally.
FIQOIDEI.

380. Opuntia Mill.

Flesh with rounded woody base; branches jointed, joints the youngest ovate, tubercled, the tubercles hirsute and spiny, Fruit with pulpy placetas. Seeds very many, oblong emb. y° straight or curved; cotyledons free or connate.


Cactus indicus F. I. ii. 475.

Behar; W. Bengal; Chota Nagpur; Orissa.

A spiny shrub with flattened, articulated, fleshy stems.

Vernac. Nāg-phana.

Order LXY. FICOIDEI.

W Srubs. Leaves simple, often fleshy, usually opposite or spaced; stipules scarious or 0. Flowers regular, hermaphrodite or polgamous, in cymes or fascicles, rarely solitary. Sepals shortly connate below or almost distinct, occasionally adnate to the ovary but usually free, often persistent. Petals very small, white, or 0. Stamens perigynous or hypogamous, definite or indefinite, sometimes accompanied by stamens, if as many as sepals opposite to them, if more sometimes connate in bundles; athers oblong, 2-celled; dehiscence longi introrse. Carpels 2-5, connate, very rarely free, superior, rarely inferior; styles as many as carpels, free or connate.
BENGAL PLANTS.

below; stigmas usually subulate, introrse; ovules ampulliferous, either solitary basal, or many axial in each carpel or \begin{itemize}
\item either solitary basal, or many axial in each carpel or circumscribed.
\item less often of separating, indehiscent cocci, or of free, indehiscent carpels.
\end{itemize}

\textit{Seeds} 1-many in each carpel, usually reniform, compressed; albumen mealy, embraced by the curved or annular embryo.

Calyx-tube elongated; stamens inserted on the tube; capsule with dehiscence circumscissile:—

\textit{Ovary and capsule 3-5-celled.} \textit{Sesuvium.}

\textit{Ovary and capsule 1-2-celled.} \textit{Trianthema.}

Calyx deeply 5-petallate; stamens hypogynous; capsule with dorsal dehiscence; ovary and capsule 3-5-celled. \textit{Moll.}

---

381. \textit{Sesuvium} Linn.

Succulent, branching, prostrate, littoral herbs; \textit{leaves} opposite, fleshy; stipules 0. \textit{Flowers} axillary, purplish; bracts 2 or 4; \textit{Sepals} 5, connate in a \textit{triangular} \textit{y-x-tube}; \textit{lo}, \textit{pept}, \textit{pet}, \textit{o}, \textit{g} or many, inserted.---

\textit{Carpels} 3-5, connate in a supercised capsule. \textit{Seeds} in each cell many, reniform: annular embryo.

897. \textit{Sesuvium} PORTULACASTKDJ, Linn.; F. I. ii. 509; F.-\textit{\&} ii. 659; E. D. s. 1203.

Sundribuns.

A seashore creeping herb.

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382. \textit{Trianthema} Linn.

Diffuse, prostrate, branching, glabrous or papilllose herbs! \textit{Leaves} pefted, opposite, unequallentire; \textit{peliol} connected rf L; membranous \begin{itemize}
\item dilations. \textit{ie} small, axillary.
\item or in clusters or small cymes; \textit{short} or \textit{long}.
\end{itemize}

\textit{Carpels} 5, 10, or 15, inserted \textit{in a 2-celled}, \textit{ovum} each carpel, arising from a basal.
FICOIDEJII.

383. Mollugo Linn.

Mollugo, often dichotomous herbs; leaves often falsely so; radical rosulate, entire, linear to obovate;
Pedioed, Mustered or in cymes or racemes; bracts minute, of 5, persistent. Petals 0. Stamens 3-5, sometimes many, staminodes intermixed. Carpels 3-5, connate in an 
locular capsule, sheathed by the calyx; dehiscence Pelted. Seeds several in each cell, rarely solitary, reniform; embryo annular.

Infloresecent in cymes; leaves not appendaged at the hilum. Stricta. Leaves and stem glabrous.......................... MOLLUGO STRICTA Linn.; F. B. I. ii. 663; E. D. M. 617.

M. triplijlla F. I. i. 360. M. pentaphylla F. I. i. 360.

In all the provinces. A suberect herb. XJriya Pita-gohun; Beng. Khet-
papara.


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 LXYI. UMBELLIFERAE

Herbs, rarely shrubs or trees. Leaves alternate, usually divided; petiole generally sheathed; stipules 0. Flowers regular or irregular, hermaphroditic, in compound, rarely simple umbels, flowers sometimes ray-like; bracts at base of geneleoles at base of secondary umbels involucrately epigynous, distinct from stamens and petals, vailio Sepals connate in a tube adnate to ovary; limb Petals 5, epigynous, often unequal, with a median upper side, with the margin often incurved or 2-lobed or reduplicate-valvate in bud. Stamens 5, epigynous, versatile; dehiscence longitudinal, lateral. Sepals connate in a tube adnate to ovary; limb Petals 5, epigynous, often unequal, with a median upper side, with the margin often incurved or 2-lobed or reduplicate-valvate in bud. Stamens 5, epigynous, versatile; dehiscence longitudinal, lateral. Sepals connate in a tube adnate to ovary; limb Petals 5, epigynous, often unequal, with a median upper side, with the margin often incurved or 2-lobed or reduplicate-valvate in bud. Stamens 5, epigynous, versatile; dehiscence longitudinal, lateral. Sepals connate in a tube adnate to ovary; limb Petals 5, epigynous, often unequal, with a median upper side, with the margin often incurved or 2-lobed or reduplicate-valvate in bud. Stamens 5, epigynous, versatile; dehiscence longitudinal, lateral. Sepals connate in a tube adnate to ovary; limb Petals 5, epigynous, often unequal, with a median upper side, with the margin often incurved or 2-lobed or reduplicate-valvate in bud. Stamens 5, epigynous, versatile; dehiscence longitudinal, lateral. Sepals connate in a tube adnate to ovary; limb Petals 5, epigynous, often unequal, with a median upper side, with the margin often incurved or 2-lobed or reduplicate-valvate in bud. Stamens 5, epigynous, versatile; dehiscence longitudinal, lateral.

Umbels simple; fruit not vittate; leaves simple

Umbels compound; fruitt usually vittate:—

Leaves simple; flowers yellow; secondary ridges of fruit inconspicuous

Bupleurum

Leaves variously compound:—

Secondary ridges of the fruit inconspicuous:—[P. 535]

Primary ridges of the fruit not winged:—[P. 535]

Fruit laterally compressed, or at least constricted at sure; ridges of the fruit slender:—

Furrows of the fruit 1-vittate

Furrows of the fruit 2-3-vittate

Fruit in cross-section circular, or somewhat dorso-pressed and widest at the commissure; furrows of 1

Flowers yellow: leaves cut into filiform segments; distinct, 2-partite; calyx-teeth 0 [p. 535]
[Flowers white or pink-tinged:—[p. 534]
Lateral primary ridges hardly wider than dorsal; carpophore distinct, 2-partite or not; calyx-teeth 0. . . . . Sesel.
Lateral primary ridges thick, triangular, corky, much exceeding dorsal; carpophore 0; calyx-teeth small, acute

**CEnanthe.**

Primary 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: α[p.534]

**Coriandrum.**

fruits hirsute, secondary ridges bristly; bracts of involucre numerous, pinnate.

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**384. Hydrocotyle Linn.**

Rostrate herbs, rooting at the nodes; leaves cordate or hastate [1 in Indian species], round or angled, subentire or palmately lobed, on 8-petioled; stipules small, scarious. Flowers white, sometimes sexual, in small, simple umbels; bracts small or 0. Sepals connate in a calyx with 5 small teeth or with limb entire. Petals 5, entire, valvate or imbricate. Stamens 5. Carpels 2, ovate in an inferior ovary. Fruit laterally compressed, compressed or 5-angled; lateral primary ridges concealed within the commissure or remote from the and prominent; vittae 0 or obscure; carpophore 0. Seed later%. A prostrate herb.

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02. HYDROCOTYLE ROTUNDIFOLIA Roxb.; F. I. ii. 38; F.

N. Bengal; C. Bengal.

A prostrate herb.

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03. HYDROCOTYLE ASIATICA Linn.; F. I. ii. 88; F. B. I. u.

E. D. H. 486.

In all the provinces.

A prostrate herb. Vernac Brahmanduki.
385. **Bupleurum** Linn.

Glabrous herbs or shrubs; leaves entire. Florets yellow, pedicelled or subsessile; umbels compound in bracteoles foliaceous or setaceous or obsolete. Sepals in a calyx-tube with entire limb. Petals 5, obovate. Stamens 5. Carpels 2, connate in an inferior ovary. Fruit subpentagonal; primary ridges distinct, some winged, rarely obscure; secondary 0, or obscure; vi 1-3 between the primary ridges, rarely 0 or more than three; ovary entire or 2-fid or 2-partite; disk depressed, rarely oblong or 2-fid or 2-partite; disk depressed, rarely terete, sometimes slightly grooved on the inner face.  

A herb, 7 feet high, with yellow flowers.

386. **Carum** Linn.

Perennial or annual herbs; leaves pinnate or decussate. Flowers white, polygamous, the sterile flowers often with irregular petals; umbels compound; bracts simple or rarely divided; bracteoles several or to. Sepals connate in a calyx-tube with teeth small or 0. Retuse or emarginate. Stamens 5. Carpels 2, ovoid, ellipsoid or oblong, laterally compressed and constricted at the commissure; carpels terete, subpentagonal; inner face flattened; primary ridges slender, lateral commisural; furrows 1-vittate; carpel 2-fid or 2-partite. Seed terete, subcompressed dorsally, flat or channelled on the inner face.  

Leaves ternately cut; lobes of the lower stem-leaves oblanceolate; bracteoles 4-8, lanceolate, margins ciliate. Leaves decomposed; lobes of all the leaves linear-setaceous.  

Cultivated in all the provinces. A field-crop, of herbs 1-3 feet high. **Beng. Chani, rajani.** Hind. Ajmud.  

906. **CARUM COPTICUM** Benth.; F. B. I. ii. 682; E. D. *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. Rarly simple and toothed. Mowers hermap

\text{Lc

Wygamo-monoecious; umbels compound; bracts few or 0; \text{hwe}

\text{co

\text{ju

\text{Hind

Ajouan; Seng. Jurani.}

388. Foeniculum Adans.
Biennial or perennial glabrous herbs; leaves 2-3-4 times
the ultimate segments linear- or setaceous. Flower,
\text{i

\text{umbels compound; bracts 0; bracteoles 0, or *tʃ*\text{ʃ}*

W» connate in a calyx with entire limb. \text{P»»5, e m a i g ^

\text{J. Carpels 2; styles short. JV»» oblong or ellipsoid,
not \text{u

\text{Ua\text{ʃ}» long, rarely very short. Fruit laterally composed;
* u% constricted at the commissure, ovate, o**obtungei
***** oblong; carpels terete or subpentagonal 'often doisaUy
^e S e d, inner face flattened; ridges slender, obscure or_p,o
2-ʃtânt; tenon 2-3- very rarely 1-vittate; carpopbore entire or
inner i; ^e S(ʃ;i; ^a, ^i-terete, or dorsally compressed,
ace almost or quite flat.

90. P:\text{MKEILIA HBYNEANA Wall.; F. B. I. U. 684. *»»»*»
tnfoliafum F. I. ii. 96.

Chota Kagp'ur; Chittagong.
A herb, 2-4 feet high, leaves 1-3 times 3-partite.

389. Seseli Linn.
Herbs, glabrous or pubescent; leaves twice or thrice pinnate or
\text{ʃ}oe 8-partite. FZo-ʃwr. white; umbels compound;
\text{ʃ}ow, rarely many; bracteoles several or many. Sepat* conna.
a calyx-tube; limb entire or with 5 minute, laciniate
or linear, teeth. Petals 5, emarginate. Stamens 5.
usually short. FVz^ oblong, ovate, or orbicular,
compressed, broadest at the commissure; carpels
occasionally much compressed dorsally; inner face
singly concave; ridges strong, obtuse or subacute,
larger than dorsal; vittas solitary, usually P^m^m^m;
disk often prominent on the fruit. Seed semi-terete or occasionally
compressed; inner face concave.

Lower leaves twice pinnate, secondary pinnae ovate, K>
ultimate leaf-segments never linear; bracts narrow, lanceo
pubescent; fruit usually pubescent to hirsute, subglobose.
Lower leaves often thrice pinnate, ultimate segments hne
lanceolate, glabrous; bracts sometimes pinnate, glabrous,

SESBLI INDICUM W. & A.; F. B. I. ii- 693; E-
Ligusticum diffusum F. I.- ii. 92.
In all the provinces.
An annual much-branched herb. Beng * an jowan.

SESELI DAUCIFOLIUM C. B. Clarke; F. B. I. « 693.
E. Bengal; Chittagong.
An annual erect herb.

Herbs of marshy ground; roots fibrous, creeping or stol
taneous, leaves 1-3-pinnate, ultimate segments large or small,
inches. Flowers white, often polygamous; male flowers
irregular or enlarged; umbels compound; bracts 0 or so
bracteoles several, linear. Sepals connate in a calyx
with small, acute teeth. Petals 5, emarginate. SW^V
Carpels 2, connate; styles short. Fruit glabrous, ellipsoid
than broad, or globose, nearly terete; commissure broad;
primary ridges large, triangular, corky; dorsal and intense,
primary ridges smaller or obsolete or all subequal; furrows
often prominent on the fruit. Seed semi-terete, dorsally compressed, with flattened inner face.
Leaves **pinnate**; stem erect; umbels on very short peduncles or almost sessile. *Seseli benghalensis*.

**SEÑANTHE STOLONIFERA** Wall.; F. B. I. ii. 696. *Phellan-

**dium stolonifenum** F. I. ii. 93.

C. and E. Bengal.

**A** herb of wet places» -B^n. Pan-turasi.

**SEÑANTHE BENGHALENSIS** Benth.; F. B. I. ii. 696. *Seseli benghalensis* F. I. ii. 94.

N. C. and E. Bengal.

A Wb of ditch-sides and banks of tanks.

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391. Peucedanum Linn.

**Perennial herbs**; leaves 1, 3 **pinnate or 2, 3 times B-partite,**

**ultimate**

entire; **flowers**

umbels 2 or more; **petals**

with usually many rays; bracts various; brac-

tely 2 or more » sometimes wanting. **Sepals** connate in a

**stem**

**cymes**

of many » sometimes wanting. **Sepals** connate in a

**petals**

5, obovate, em'ar-

**carnelian**

**carpels**

2, connate in a glabrous or calyx,**

**stamina**

5. **fruit**

compressed dorsally, ellipsoid, oblong or

hardly convex on the back, their margins more

or less winged, but dorsal and lateral ridges winged, but dorsal and

Gory vittate or obsolete; dorsal furrows 1-vittate;

Gory vittate or obsolete; dorsal furrows 1-vittate; commissure 2-vittate; leaf-segments oblong, ovate, or (rarely)

**Dhema.**

**fruit**

expanded (lanceolate to ovate); fruit large, much

furrows 1-vittate, lateral 2-vittate; com-

** segments**

of lower leaves ovate-acute, of upper linear

*napurentU.
913. **PEUCEDANUM SOWA** Kurz. *P. graveolens* F. B. I. ii. 94.


Generally cultivated.

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. glaucum var. nap*.

**jmrensis** F. B. I. ii. 710.

Behar; W. Bengal; Chota Nagpur.

A tall herb, 5-7 feet high. *Vernac.* Tej raj.

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**392. Coriandrum** Linn.

An annual, branched, glabrous herb; leaves *teOoll A con*.

*Flowers* white or purple, the outermost irregular; *ullbeA. forClf* pound, rays few; bracts 0, or small and linear; bracteoles filliw.

tew. *Scjmls* connate in a calyx-tube; limb with small, often unequal teeth. *Petals 5/obovate, emarginate. &****

*Carpel* 2, connate. *Fruit* subglobose; ridges not *&* *na*
dorsal primary and adjacent secondary strongest, lateral pr»
and secondary obscure; vittae solitary, under the secondary *«**
obscure; commissure distinctly 2-vittate; carpophore 2-p»
*Seed* convex dorsally, with concave face, almost three tin**
broad as thick.

916. **CORIANDRUM SATIVUM** Linn.; F. I. ii. 94; F. 31.1-

E. D. c. 1954.

Cultivated in the northern and western provincs._nhan. e.

An annual glabrous herb. *Hind.* Dhaniya; *BenQ- Vb* ,

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**393. Daucus** Linn.

Annual or biennial, usually hispid herbs; *haves ***&*.

ultimite segments small or narrow. *Flowers* white, outer ofl<
irregular; *irlbA. forClf* umbels compouvid, rays usually many; bracts p to ^
usually many; bracteoles many, entire or 3-fid; sometimes ob*

*ofh i. f"n A mat d a A lyx-tube; teeth of limb sm*g. 1C.

*commn A P*:*v A obovateA. rginute* *Stamen, 5. C-* ^,**

ridges all *f"dU P*tar.* «*e.«.«I> me what compressed dorsalbj
prifinary 1iU1 ^T 6?" ** or A th « secondary bristly; *at «
prnary Utte developed; lateral secondary the widest; «**
solitary under the secondary Adgea carpophore entire or 2-fid.
semi-terete, dorsally subcoupussed; inner face flattened.

Daucus Carota Linn.; F. I. ii. 90; F. B. I. H. 718.
Cultivated, especially in the western parts.

Order LXVII. Araliaceae.
Trees or shrubs, rarely herbs, sometimes scandent, or at first
scendent, at length rigid, frequently armed with prickles. Leaves
simple or compound; stipules adnate to petiole, some-

Sepals connate in a tube, ovary; limb truncate or with small teeth or obsolete.
Stamens as many as petals and alter-

Fruit usually small, berry-like,

embryo minute, near hilum.

? * * lightly overlapping in bud; pedicels jointed; styles distinct;
compound; ovary (in our species) 4- or more-chambered; albumen

Heteropanax.

Stages combined; leaves simple and palmately

Brassaiopsis.

Pinnately compound; styles distinct.
BENGAL PLANTS.

"Ovary 4- or more-chambered; albumen of seed uniform; leaves not pinnate; styles united, at least at the base. [Lp. 541]"

Leaves (in our species) perfectly digitally compound; fruit angulo-ovoid, not larger than a pea. ............

Leaves simple, deeply palmately"iobed," or" imperfectly digito-compound; fruit ovoid, -5 in. long. .................

394. Aralia Linn.

Herbs, shrubs, or small trees, glabrous, hairy, or prickly; leaves alternate or whorled, digitate, pinnate, or compound leaflets serrate or nearly entire; stipules small. Floaeef polygamo-monoecious, in solitary, less often racemed or umbels, rarely in compound umbels; pedicels jointed or not entire to the flower. Sepals 5, connate in a truncate or 5-toothed Petals 5; ovate, imbricate. Petals 5; ovate, imbricate. Stamens 5. Carpels 2-5, connate in 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-angled, 2-3-celled and subglobose berry. Seeds compressed; albumen uniform.

918. ARALIA FOLIOLOSA Seem.; F. B. I. ii. 728.

Chittagong.

A large lax shrub, armed with numerous prickles.


A small unarmed tree; leaves very large, pinnately decompounded, almost or quite glabrous; stipules not prominent. Floaeef polygamos, umbels racemed, more or less stellately 5-celled, usually only the terminal umbel of each branch of the S J 7 5 3 Small, ovate> oblate persistent; pedicels omiss. Sepals connate in a calyx with subentire limb. P****. Style. Stamens. 2, dist. filiform, spreading. F<1 a laterally pressed, albumen rm fragrant P. I. y. 76.

919 HETTY Pressed; albumen fragrant. Chota Nagpur; Bengal; Chittagong.

Large shrubs or angled; stipules J"f or not; &", digitate or pscrapetial, connate, not prominent. [Lp. 541]"
Polygamous; umbels in large compound panicles, young parts stellately tomentose; bracts small, often persistent; pedicels with a dense cluster of persistent bracteoles, not jointed. Flower connate in a 5-toothed calyx. Petals 5, valvate. Stamens or Carpels 2, connate in a 2-celled ovary; styles long or short, united; stigmas apical, oblique, intorse. Fruit a globose or tur- nate drupe; pyrenes 2, or by abortion 1. Seed not compressed; albumen ruminate.

Leaves simple, palmate, divided about half-way down into oblong, acute segments. petals
Leaves impound, digitate 7 petioles' long; leaflets lanceolate or elliptic speciosa.


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.** Panax Linn.

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, rarely 3, connate in a 2-3-celled ovary; styles 5, distinct. Fruit a subcompressed or globose, 3-seeded berry; the carpels rounded on the back. Seed compressed or suberet, smooth or sulcate; albumen uniform.

**922.** HNAX FRUTICOSUM Linn.; F. I. ii. 76; F. B. I. ii. 725.

Cultivated.

A shrub, 3-6 feet high.

**398.** Heptapleum Gaertn.

Large shrubs, sometimes climbing, or trees, unarmed; leaves digitate, rarely compound digitate, or 1-foliolate; leaflets connate, entire or distantly toothed or lobed, those of the upper almost always entire; stipules prominent, often intra-
petiolar, connate. Flowers in umbels, rarely heads, a compound racemes; bracts woolly, deciduous or bracteoles usually few or 0, rarely densely tufted; petals 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 sometimes connate in a narrow cy Fruit a subglobose, 5-6-angled, dry drupe. Seeds c albumen uniform.


Behar; Chota Nagpur.

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 panicked; 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 with 8-12 cells as there are petals or stamens; styles subcoriaceous, in the fertile flowers often calyptrate. Petals 8-12, connate in an ovary with 8-12 cells as there are petals or stamens; styles subcoriaceous, in the fertile flowers often calyptrate. Fruit a large, ovoid berry. Seed coalbumen uniform.

924. TREVESIA PALMATA Vis.; F. B. I. ii. 732. Gaston**

F. I. ii. 407.
Chittagong.
A small tree, 10-15 feet high.

Order LXYIII. CORNACEA.

Shrubs or trees. Leaves opposite or alternate, petioled, entire or sometimes angled, lobed or serrate; sepals connate in a truncate or toothed calyx-tube, adnate to ovary; 1 in a truncate or 4-5-toothed,
COSNACEJE.

545

etaU or 4-5, occasionally many, epigynous, imbricate or val-vate. Stamens inserted with and as many as, rarely 2-4 times as J^y as the petals; anthers short or long; dehiscence longi-

*<sup>id</sup>al, i<sub>ntroise</sub> or lateral. Ovary inferior, 1-4-locular, crowned \( V \) the disk; style simple, short or long; stigma capitate or inched; ovules in each locule solitary, very rarely 2-3, pendu-

*\( ^{**} \) 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, °&etmeg with leafy cotyledons.

Stamens twice or thrice as many as petals; cotyledons corrugate

Alangium.

Sta0iens as many as petals; cotyledons flat............Marlea.

400. Alangium Lamk.

Shrubs, sometimes climbing, or small trees, armed or not;

*<sup>l</sup> alternate, petioled, oblong, entire, 3-nerved at base. Flower* in axillary fascicles or condensed cymes, hermaphrodite, w\( ^{*} \)ite; pedicels jointed under calyx; bracts 0. Sepals 6-10, con-

\( ^{*} \) ni a calyx-tube, adnate to ovary; limb toothed or truncate.

-<sup>wole</sup> 6-10, linear, oblong, valvate in bud, reflexed in flower,

Stamens 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, car-

*\( ^{*} \)olat\( ^{*} \); ovule solitary, pendulous. Fruit a 1-seeded berry, crow-

\( ^{*} \)red % the somewhat accrescent calyx-limb. Seed oblong;

albumen ruminate; embryo with leafy, corrugate cotyledons.

ALANGIUM LAMARCKII Thw.; 'F. B. I. u. 741; E. B. A. 681.


*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<sup>C</sup>; sepals connate in a toothed \( \tilde{\text{o}} \) calyx-tube. Petals 4-8, linear, free or somewhat connate at the base, valvate. Stamens 4-8 (in our species almost always
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berry. &«» oblong, o«»

N. Bengal; CHittagong.
tree 20-60 feet high. Vernac. Marleza, marlia-

III.—COROLLIFLOB^I.

to u!rovarvV

Petals, or Z ™ • ^ ? r 6 6 ; free ^ P ^ 8 or calyx-lobes as
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Order LXIX. CAPRIFOLIACEAE.

Shrub, or small trees. Leaves opposite, rarely alternate, simple, lobed, interpetiolar or whorled; stipules absent or rare. Flow-ers hermaphrodite, cymose or paniculate, tubular or capitate; regular or irregular. Sepals connate in a calyx-tube and alternate with the corolla-tube and alternate with the corolla-tube; 5-lobed, often 2-lipped corolla; lobes imbricate in bud. Petals connate to corolla-tube and alternate with the corolla-tube; 5-lobed, often 2-lipped corolla; lobes imbricate in bud. Carpels connate in a 3-5-celled ovary; ovules solitary pendant on axial placentas; style long, with stigma 3-5-partite, or stigmas 3-5, sessile. Fruit a drupe with 1-8 pyrenes, or a many-seeded berry. Seeds 1 or many, usually minute.

402. Sambucus Linn.

Shrub, or small trees. Leaves odd-pinnate, large; leaflets serrate or mucronate; stipules absent or present. Flowers small, in large, branched corymbbs or heads; I bracts always present, pedicels jointed; petals small or 0. Sepals connate in a 3-5-toothed calyx, connate in a rotate or campanulate 3-5-partite corolla. 5' adnate to nearly the base of the corolla-tube. Carpels in a 3-5-celled ovary; ovules in each cell solitary, pendant on axial placentas; style long, with stigma 3-5, sessile. Fruit a drupe with 1-8 pyrenes, crowned by the calyx-teeth. Seeds com-927 longated.

Order LXX. RUBIACEAE.

Trees, or shrubs, rarely annual, erect or twining, unarmed or provided with spines or hooks, rarely prickly. Leaves simple, alternate or whorled; quite entire, with interpetiolar or less often interpetiolar or ar stipules, or very rarely with stipules replaced by lateral veins. Flores often 2-3-inorphic; inflorescence very variable. Carpels connate in a calyx-tube, adnate to ovary; limb various.
BENGAL PLANTS.

Petals connate in a regular gamopetalous corolla; petals, imbricate, or contorted. Stamens 4-5, inserted at mouth or in the tube of the corolla, alternate with its sepals. Petals short or obsolete, or long; anthers 2-celled, usually sifixed; dehiscence lateral or introrse. DM epigynous. Carpels connate in an inferior annular or cushion-like. Carpels connate in an inferior celled ovary; ovules 1 or more in each cell; style simple or several. Stigmas various. JW 2-10-celled, a berry, drupe, or capsule composed of mutually separating indehiscent cocci. Various; albumen fleshy or horny; embryo straight or conical; cotyledons flat or semi-terete; radicle superior or inferior.

Ovules numerous, ovules, or, if few, at least more than one in each cell: Fruit dry, dehiscent, or if indehiscent separating into several seeded cocci, rarely nutlike. Flowers in dense globular heads; corolla funnel-shaped; stigmas simple, far exserted. Ovaries confluent; fruits forming a globose, solid mass; corolla lobes imbricate in bud; beads not bracted; trees... Anthocep... Ovaries free or nearly so; fruits quite separate, capsular; corolla lobes valvate in bud:

Flowers intermixed with paleaceous bracteoles; trees:

Calyx-limb 5-toothed; heads with or without bracts. Calyx-limb entire; beads with 2 wide bracts. Flowers not mixed with bracteoles; climbers with peduncles:

Flowers axillary, solitary or in terminal cymes, racemes or panicles; never in dense globose heads:

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

Corolla-lobes valvate in bud:

Trees; flowers with leafy bracts, in paniculate spikes. W capitular, celled; seeds winged

Herbs; flowers and scieded, axillary, or terminal cymes:

Fruit indehiscent, globose, nut-like, 2-celled; corolla 5, each 2-3-toothed; stipules entire; flowers solitary, axillary: Dendella.

Fruit dehiscent, usually slightly oblong, 2-celled, or if indehiscent (often in Helyotl) 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].…………Ophtiorrhiza.

†Fruit flexy or leathery; a ben J or dTMP enlike with 2 or more many

Pirennes: shrubs or trees; seeds not winged:[p. 548];

†olla 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.

†olla 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…………………………Petunia.

Flowers sessile; anthers hirsute, subincluded

Hyptianthera.

Flowers usually pedicelled; anthers exserted, glabrous

Diplospora.

*Ovule solitary in each cell:[p. 548]

†Corolla-lobes contorted in bud; stipulee Interpetiolar, solitary; shrubs or small trees:[p. 550]
Flowers in large corymbs; stigma fusiform, exserted:
  Corolla-lobes 5; style short, pubescent; stigma stout

  Corolla-lobes 4 (rarely 5 in Pavetta); style long, slender

  Bracts membranous, the lower sheathing

  Bracts coriaceous, not sheathing

Flowers axillary, solitary or fascicled; style-arms % linear-

§ Corolla-lobes valvate in bud:—[p. 549]

Shrubs or small trees, usually erect; leaves stipulate:
  Flowers in dense heads, calyces confluent; fruits globose or oblong solid mass; erect shrubs or small trees

Flowers free:
  Erect shrubs or small trees:

  Fruit drupaceous; styles not papillose:

  Style stout, stigma large; ovules pendulous, superior; flowers axillary, fascicled:

  Ovary 2-celled

  Ovary 3-5-celled

  Style slender, stigma divided; ovules erect; inferior:

  Flowers in terminal cymes; calyx-limb toothed; style-arms 2

  Flowers in axillary fascicles; calyx-limb deeply, style-arms 3-9

  Fruit capsular; capsule 5-valved at apex; style 6-fid, flowers densely panicled

Twining foetid shrubs; styles 2, capillary, twisted, fruit of 2 dorsally compressed, 1-seeded pyrenes

Herbs:

Leaves opposite, stipulate; stipules setaceous, connate with petioles into a toothed cup; fruit of 2 separable cocci:

  Ovules pendulous; seeds compressed dorsally, radicle superior; fruit very small, the separable cocci indehiscent:

  Ovules attached to septum of ovary; seeds oblong 5 inferior:

  Fruit large, corky, oblong-obovoid, acutely 3-4-angled between the sharp margins, the separable cocci indehiscent:

  Fruit small, crustaceous; one or both of the separable cocci dehiscing:

  Flowers densely panicled
Leaves whorled; stipules replaced by leaves; fruit of two coriaceous or fleshy, indehiscent lobes [p. 550].

**Rubiaceae.**

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 C<>ol<ia; throat glabrous; lobes of limb imbricate. Stamens 5. a®nate to throat of corolla; filaments short; anthers ovate-oblong, apical. Dish 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 a of the 4 upper partial loculi; style simple, exserted; stigmaiform. Fruit a confluent, fleshy mass of many few-seeded, mceu8 pyrenes. Seeds minute; testa thinnish; albumen cylinic, y embryo clavate.


Very generally planted.


404. **Adina** Salisb.

Trees or shrubs; leaves petioled; stipules large, caducous. « towers densely crowded in solitary or panicked globose heads, on a hairy receptacle; peduncles with or without bracts; bracteoles ¥ s!Pals connate in a 5-angled tubular calyx; limb 5-lobed. qeatal¥ 5, connate in a long, funnel-shaped tube; lobes valvate. atowten, 5, adnate to mouth of corolla; filaments short; anthers c®rt, c Oblong. Carpels connate in a 2-ceUed ovary; ovules many, hirracitely set on a pendulous placenta in each cell; style simple, hifi rm; stigma capitate or clavate. Fruit a cluster of capsules, c®h separating into 2 follicular cocci and many-seeded. Seeds oblong; testa winged; albumen fleshy; cotyledons flat; radicle cylindric, superior.

Flowers downy or silky:—[p. 552]


**conUjolui.**
BENGAL PLANTS.

Leaves sessile, oblong, subcordate, tips rounded, peduncles terminal, 1-3, 1-headed [p. 551].

Flowers glabrous; leaves shortly petioled, lanceolate, caudate, glabrous; heads in trichotomous panicles [p. 551].


Nauclea cordifolia F. I. i. 514.

Chota Nagpur; Behar; W. and N. Bengal. A considerable tree; wood hard. Hind. H. a

Beng. Bangka, da-kóm, petpuria, kali-kadaa,

Holonda; Santal. Karam; Kol KuruniD « sanko.

930. ADINA SESSILIFOLIA Hook. f.; F. B. I. iii-24, > E.*

Nauclea sessilifolia F. I. i. 515.


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, and terminal, solitary or panicked or subuniubel peduncled, with two deformed apical leaves, within caducous bracts; bracteoles paleaceous. Sepals 5, conclude 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, cordate, lanceolate, apiculate. CarpeU connate in a ovary; ovules imbricately set on pendulous Plicacental, filiformi; stigma capitate or mitriform. Fruit of 2 to many-seeded cocci. Seeds small; testa winged; albumen Calyx-limb short but distinct; tube of corolla much exceeding the glabrous lobes.

Vncaria.-]  

MWIACEJE.  

553  

Chota Nagpur; Behar; E. Bengal, Mymensingh.  

A small or medium tree.  

Hind. Kadam, keim, kangi;  


933. STBPEGYNE DIVERSIFOLIA Hook. f.; F. B. I. m. a>;  


Chittagong.  

A small tree.  

406. Uncaria Schreb.  

Climbing shrubs, often with hooks; leaves \( \frac{3}{2} \) TMPubescent, sessile ..................  

Stout rounded branches and leaves beneath and on \( \frac{1}{2} \) TMBzech, sessile ..  

Peduncles terminal as well as axillary, bracteate near top; leaves beneath rusty-tomentose; capsules spindle-shaped, with \( \frac{1}{9} \) JJj I £  

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 thyroid 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; lobes imbricate. Stamens 4 or 5, adnate to limb of corolla between the lobes; filaments 0 or elongated; anthers ventral, exerted, linear or oblong. Carpels connate in a 2-celled, rarely 3-celled ovary; ovules many on small globose placentas; filiform; stigma entire, 2-fid or 2-partite. Fruit a small, pome loculicidally, rarely septicidally, 2-valved, many-seeded capsule. Seeds very small, horizontal, compressed; testa membranous; albumen fleshy; embryo short, cylindrical. Corolla-tube shorter than the lobes; anthers much exerted, nearly as large as corolla-lobes.

937. WENDLANDIA EXHKRTA DC.; F. B. I. iii. 53; E. W. Rondeletia excrta F. I. i. 523.

Tirhut; Behar; Chota Nagpur; Orissa; W. Bengal. Chulai, chil-kiya, tilki, birsa; Santal. Hundro, pichari baha.

938. WENDLANDIA TINCTORIA DC.; F. B. I. iii. 38; E. D. Rondeletia tinctoria F. I. i. 522.

Chota Nagpur; E. Bengal, Mymensingh; Chittagong. A small shapely tree. Beng. Tula-lodh; Santal.

*08. Hymenodictyon Wall.

Trees or shrubs, with thickened Ranches and bitter bark! stipules deciduous. Flowerspaniculo-tate, reticulate, persistent bracts; bracteoles small or obovate; short, ovate calyx lobes connate; petal-lobes 5 or 7, exserted, glabrous within; lobes at the edges.

554

BENGAL PLANTS.
HVPBACJr.

Corolla throat; filaments short, dilated upwards; anthers linear, connate in a 2-celled ovary; ovules many on cylindric placentas; style filiform; stigma fusiform. Fruit a loculicidally-valved, many-seeded capsule, the slender placentas at the base. Seeds imbricating upwards; testa wide-winged; fleshy; embryo minute.

Hymenodictyon excelsum Wall.; F. B. I. Hi. 35; E. D. H. 517. Cinchona excelsa F. I. i. 529.

Tirhut; Chota Nagpur; E. Bengal.


409. Dentella Foist.

A small, weak, prostrate, annual or perennial-rooted herb; stems branching subdichotomously and nodes rooting; leaves axillary; Stipules connate, scarious. Flowers minute, solitary, in the forks, sessile or pedicelled, white. Sepals connate in a globose calyx; limb tubular, 5-fid, persistent. Petals 5, induplicate; a funnel-shaped tube tightly within; lobes 5, dentate, filiform. Stamens 5, adnate to middle of corolla-tube; ovules many on hemispheric placentas; style short; stigma filiform. Fruit small, dry, globose, 2-celled, indehiscent, fleshy. Seeds minute, angled; testa dotted; albumen fleshy; embryo ovoid.

410. Hedyotis Linn.

Herbs, undershrubs or shrubs; leaves opposite, rarely ternate; stems or nodes rooting. Flowers white or in terminal or axillary, open, compact, or capitate cymes. Petals connate in an ovary or turbinate calyx; lobes 4, acute, or ovate-linear, imbricate. Stamens 4, adnate to or throat of corolla; filaments short or long; anthers inserted 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, septicidally or loculicidal capsule, sometimes of 2 separable or connate cocci or quite indehiscent; cells or cocci 2-many-seeded. Seeds: planthorn convex or angled; testa hardly ever winged; albumen horn embryo clavate.

Capsule dividing septicidally into 2 cocci, each several-seeded and rally dehiscent; top of capsule rounded and protruded between calyx-teeth; cymes subumbellate; a much-branched, stoutish, climbing herb. Capsule tardily loculicidally dehiscent on the crown only, or quite indehiscent:

Fruit loculicidally opening on the crown; cells many-seeded; 1 central nerve; capsules hispid:

Leaves narrow-linear, scabrid above; flowers in sessile, axillary and terminal cymes; calyx-teeth subulate, shorter than capsule. Leaves elliptic to lanceolate, scabrid on both surfaces; flowers in axillary clusters; calyx-teeth truncate, nut as long as capsule.

Fruit altogether indehiscent:

Fruit hard, minute; cells few-seeded; cymes all axillary longitudinal plaited, rarely flat, always more than 1-nerved:

Cymes sessile; flowers subsessile; calyx-teeth shorter than glabrous or hispid fruit.

Cymes peduncled; flowers pedicelled:

Peduncles short; calyx-teeth longer than the hispid fruit.

Peduncles long, filiform; calyx-teeth shorter than the glabrous fruit.

Fruit membranous, broadly obconic; cells many-seeded; axillary and terminal; leaves 1 - nerved; calyx-teeth recurved imbricate; 2-nerved.


**MKDYOTIS** PINIFOLIA Wall.: V IV T. iii. 00.

A slender, wiry, annual herb with *ialiyyed* status.
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.

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.

HEDYOTIS LINKATA Roxb.; F. I. i. 365; F. B. I. iii. 59.
K. Bengal; Chittagong.
A herb, 15-2 feet high.

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.

HEDYOTIS THOMSONI Hook. f.; V. B. T. iii. M.
X. and E. Bengal.
A small annual herb, on muddy river-banks.

Oldenlandia Linn.

Erect, slender, or diffuse, 2-3-chotomously branched herbs;

\( p^{*} \)Usually small and narrow; stipules acute or blunt.

\( \text{Gen.} \) A. paniculate cymes, rarely solitary. Sepal\(^*\) connate in a
\( \text{Pet.} \) hypocrateriform or funnel-shaped corolla; lobes

\( \text{Stam.} \) 4, rarely 5, usually erect and

\( \text{Carpe.} \) connate in a

\( \text{Fruit} \) a small capsule, 

\( \text{V} \) linear.

Fruit small capsules, not winged, smooth or pitted; testa

\( \text{Embry.} \) clavate.
BENGAL PLANTS.

Calyx-teeth subulate, their bases in fruit not contiguous. Flowers sessile, or on very short, thick pedicels, us
diffuse, flaccid herbs:

Leaves flat, ovate, elliptic or orbicular, nerves dis
chiefly in upper axils, solitary or sometimes clustered
as long as tube of rotate corolla.

Leaves with usually recurved margins, linear ner
mostly in lower axils, always solitary; calyx-teeth

as tube of corolla.

Flowers pedicelled, or if nearly sessile then on axillary P
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 some xнес
upper axils; flowers few or simple; pedicels long,
Calyx-teeth not much shorter than corolla-tub,
usually solitary, sometimes two, rareiy
flowerecl; capsule not extended beyond tips of ear
diffuse or less often erect herb.

Calyx-teeth considerably shorter than corolla-tu
always solitary, usually 1-, rarely 2-flowered;
tended beyond tips of calyx-teeth; a much-bnuic
erect herb.

Peduncles from the upper axils chiefly, usually
fewer than 3-flowered; pedicels very short; cymes
varely sessile, and if so then terminal; a diffuse
rigid herb.

Flowers only partly axillary, chiefly in large, op
panicled cymes; erect herbes with linear leaves:

Stem acutely 4-angled; calyx-teeth not much s
corolla-tube; capsules didymous; margins of recurred.

Stem terete; calyx-teeth very much shorter than
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, virga
large, dark brownish-pink; corolla over -4 in. long.

• Beeds hardly angled; testa deeply coarsely "pU\d i\leaves flat; 0

• teeth broadly triangular :─[p. 557]
**Oldenlandia.**

Rubiaceae.

Stem glabrous, leafy; branches leafy throughout; leaves opposite; furfuracea, naked below, or with 1 pair of leaves, and with each a whorl of 4 leaves or naked; capsules hemispheric.

948. OLDENLANDIA CRISTALLINA Eoxb.; F. I. i. 422; F. B. I. iii. 65.

C and E. Bengal; Chittagong.


950. OLDENLANDIA TRINERVIA Retz.; F. B. I. iii. 66.

Chittagong.

A diffuse flaccid weed.

955. OLDENLANDIA CORYMBOISA Linn.; F. B. I. iii. 64; B. V. 1. 132. 0. biflora F. I. i. 423. 0. ramosa F. I. i. 414.

In all the provinces. Mind.

Dhaman-papar; Beng. Khet-papra.

952. OLDENLANDIA HEYNEI Br.; F. B. I. Hi. 65. 0. herbacca F. I. i. 424.

Chota Nagpur; Orissa.

954. OLDENLANDIA OMIBELLATA Linn.; F I. i. 421; E. D. O. 137.

Orissa, on sand-dunes near the sea.


9-4. OLDENLANDIA BRACHIATA Wight; F. B. I. iii. 66.

Behai-, Patna.

9-4. OLINDLANDIA BRACHIA Br.; F. B. I. iii. 67.

Chota Nagpur.

A slender, erect herb.

A very slender, extensively branching herb of dry places.

956. QUWLLIA ORICILIS DC.; F. B. I. iU. 68. 0. «m* «fc»

F - B. I. iii. 68.

N- Bengal; Tirhut; Chota Nagpur.

A slender, erect herb of grassy places.
957. OLDENLANDIA PANICULATA Linn.; F. B. I. 111, 69, 0. a* a
C. and E. Bengal.
A diffuse or erect succulent weed.

958. OLDENLANDIA NUDICAULIS Roth; F. B. I. I
Behar; Chota Nagpur.
An erect, rather thickly softly stemmed her.

412. Anotis DC.
Herbs, ascending or prostrate, rarely erect; stipules membranous or with marginal bristles. Flowers terminal dense, rarely lax heads or cymes. Sepals compressed calyx-tube; lobes 4, with wide petals intervelU intersinuses.
413. Ophorrhiza Linn.
Small, erect, creeping or decumbent herbs, rarely u leaves usually elliptic - lanceolate; stipules caduous-
white, pink, or greenish, secund on the branches of terminal dichotomous cymes; bracts and bracteoles Sepals connate in a short turbinate or subglobose calyx*, 5, small, persistent. Petals 5, connate in a tubular shaped corolla; lobes short, the back often winged, an coronotr* tube
5, small, persistent. Petals 5, connate in a tubular shaped corolla; lobes short, the back often winged, an with a fold in the sinus. Stamens 5, adnate to
ments short or long; anthers linear, 2-fid at base, on 2-lobed. CarpeU connate in a 2-celled ovary; ovules i basal ascending placentas; style filiform; stigmas W near o*
14. Mussaenda Linn.

FRUIT a compressed, obcordate, coriaceous capsule, 

14. Mussaenda Linn.

givt. ned - Fruit a compressed, obcordate, coriaceous capsule, 

gapi. a middle by the calyx-limb; crown opening by 2 wide-

ar1 ValVGs, placentas 

tes. a crustaceous; albumen fleshy; embryo clavate.

^membranous, thin:-

yves lax and flowers glabrous; capsules glabrous

Harriaiana var. arflentea.

Lemes ae nse-flowered, tomentose; capsules pubescent... trichocarpa.

Ves almost coriaceous; cymes very dense-flowered and clothed

n de, rusty pubescence

96. Q*HIORRHIZA HARRISIANA Heyne var. ARGBNTEA Hook. f;

Chittagong.

961 ^P*ennial herb, shrubby below.

* Q'HIORRHIZA TRICHOCARPA Bl.; F. B. I. iii. 78.

Chittagong.

qft - yl2 OPHIORRHIZA VILLOSA Roxb.; F. I. i. 702; F. B. I. iii. 79.

^hittagoiig.

A perennial herb.

414. Mussaenda Linn.

0) S*ub« or undershrubs, rarely herbs, erect or climbing; leaves 

PPoate, or ternate; stipules solitary or in pairs between the

loles. Mowers yellow, scarlet, or rarely white, in terminal

Tmes; bracts and bracteoles small, deciduous. Sepals connate 

t an oblong or turbinate calyx-tube; lobes of limb 5, usually 

d Clitius, one of the 5 frequently developed as a large, petioled,

et-like white or coloured leaf. Petals 5, connate in a long

j1 Orolla, tubular below, funnel-shaped above; tube usually silky,

r nostrillous; lobes valvate, with edges everted. Stamens 5, 

acinate to throat or tube of corolla; filaments very short; anthers 

ar. Carpels connate in a 2-celled ovary; ovules many on 
Peltate, fl. placenta; style filiform; stigmas 2, linear. Fruit 
a d'eshy, many-seeded berry with an areolate crown. Seeds 
Unate 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. ............ glabrect.
963. **Mussaenda Eoxburghii** Hook. f.; F. B. I. iii. 87.
N. Bengal, Duars; Tippera; Chittagong.
A suberect shrub.

964. **Mussaenda 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 numerous, many-nerved, sometimes toothed and glandular; small or large. Flowers white, yellow or greenish, in terminal panicled diffuse cymes; bracts often glandular. 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); short; anthers linear-oblong. Carpels connate in a 2-celled ovary; ovules many on fleshy, Placentas; style short or long, slender or thickened above; stigmas 2, or 5-6, linear. Fruit a small, globose, fleshy or eat 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; leaves large; stipules large. Flowers white, in large peduncled, terminal, rarely axillary, capitate or corymbose cymes; bracts gland. Sepals connate in an ovoid calyx-tube; lobes 5, 1 and persistent, longer than the corolla. Petals 5, connate, small tubular corolla; throat villous; lobes short, erect, filaments subulate; anthers linear, included. Carpels connate in a 8-celled ovary; ovules many, on hemispheric placentas; style fleshy; many-seeded berry, angular; embryo minute.
417. Hamelia Jacq.

Leaves with slender terete branches; leaves opposite or whorled, subscorpioid cymes, rather large, acts minute. Sepals connate in an ovoid or be; lobes 5, short, erect, persistent. Petals 5, connate in a tubular or subcampanulate corolla; tube constricted at the base, slightly Wangled; throat glabrous; lobes short, triangular, swollen. Carpels connate in a 5-celled ovary; ovules many on a twisted stalk; style filiform, stigma fusiform, sulcate, slightly 5-lobed. Fruit a small, ovoid, 5-locular, many-seeded berry, surrounded by the somewhat 5-lobed disk. Seeds very small, testa membranous; albumen fleshy; embryo clavate.

A favourite shrub in gardens; often also subspontaneous near villages in C. Bengal.

418. Gardenia Linn.

Leaves on slender stems or trees, often armed; leaves opposite, rarely ternate; stipules intrapetiolar, often connate. Flowers often large, terminal or axillary, solitary, fascicled, or rarely cymose, often jinorphic and polygamous. Sepals connate in an ovoid or oval calyx-tube; limb variable, tubular, spatheaceous or cleft at the base, often persistent. Petals connate in a tube longer than the calyx, lobes 5-9, contorted. Stamens 5-9, adnate to the corolla-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, ellipsoid; 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 hard; embryo minute.

Shrubs without spines; stipules connate, large; flowers large, 1-3 more across, solitary; buds resinous:

Fruit without ribs; calyx-limb distinctly toothed:

- Calyx-teeth elongated, narrow-lanceolate to subulate; leaves 1-2 in. long:
  - Leaves dull greenish, broadly elliptic or orbicular, obtuse, soft at times terebrate, almost sessile; nerves about 12 pairs; calyx-subulate-lanceolate, unequal, recurved; corolla-lobes 5-9; oblique; fruit globose; placenta 4-5.
  - Leaves shining, elliptic, obtuse or subacute, distinctly pubescent; nerves 20-30 pairs; calyx-teeth narrow-lanceolate; corolla-oblong; fruit ellipsoid or subglobose; placenta 2.

Fruit distinctly 5-ribbed, ellipsoid; leaves acute:

- Calyx-teeth short, ovate-acute; leaves small, under 3 in. long; shining, obovate, acute or obtuse, sessile; nerves 15-20 paired; corolla-lobes 5, oblong, obtuse; fruit ellipsoid or oblong; placenta 4-5.

Shrubs armed with spinescent, "abortive" branches; stipules free, velutinous; flowers small, under 1 in., the females solitary, the male 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

969. *G A M* i^ATIFOLIA Ait. • F. L. i. 705; *F. B. I. iii. 116;
E. D. G. 12a.

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.


Chota Nagpur.

A woody bush with resinous buds. *Hind.* Dikmáli; *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.


*G. costata* *F.* I. i. 704.

Chittagong.

A deciduous tree, with resinous buds.


Behar; Chota Nagpur.

A small deciduous tree. *Hind.* Thanella, khurrūr, ghurga, mhaner; *Uriyci* Bhamenia, dhobélkirat; *Kol.* Karhar, duduri; *Santal.* Dandoukit, dodouki.


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 often arrested; stipules short, intrapetiolar, free or connate. Flowers in axillary or leaf-opposed cymes, sometimes fascicled, often solitary. Sepals connate in an ovoid or obovoid or tur-
binate calyx-tubular; tubules; lobes 0 or short, or W
short tube, unarmed, or armed; stamens connate in 2-celled ovary; ovules usually many;
and leafy. Peduncle small or short; stamens connate in 2-celled ovary; ovules usually many;

Disk contorted - Stamens 5; anthers narrow

Flowers in amaryllis form with a peduncle (sometimes in 11. dinntortus)

Seed narrowly lanceolate; berries small, pulpy; Seeds often embedded in round cotyledons

Flowers in amaryllis form with a peduncle (sometimes in 11. dinntortus)

Seed narrowly lanceolate; berries small, pulpy; Seeds often embedded in round cotyledons

Randia uliginosa DC.; F. R. I. 110; E. D. R. 16.

Posoqueria uliginosa F. I. i. 712.

A small, rather rigid tree with thick, woody, 4-angled
brances; leaves, except on young shoots, tufted terminal. Fruit edible, sold in bazars. Ht* & 1' TM.1
Beng. Piralo; Vriya Pendran; Santal. Pinde; Kol. 1'mdar,

977. RANDIA DUMETORUM Lamk; F. 13. I. iii. HO; E- 2a, »• 714
Posoqueria dumetorum F. I. i. 713. P. nutans F. L i.
P. longispina F. I. i. 716. P. floribunda F. 1.1. TW.
In all the provinces.
A small, rather variable tree or rigid shrub with ban,
<ontal spines. Vriya Pativa; Beng. Menphal, madan.,
ffind. Menphal, manyol, karhar; Rajbans. Gmol,
SanteZ. Loto, boi bindi; Kol Pato, portoho.
978 D
979. RANDIA WALLICHH Hook, f; F. B. I. iii. US-
A^ee wI very stout but mfixuous spreading Ranches;
WOL RANDX A LONGIFLORA Lamk; F. B. I. iii. HI-
Posoqiena longiflora F. I. i. 718.
E. Bengal; Chittagong.
A large climbing glabrous shrub.

420. Petunga DC.
Glabrous shrubs with rigid round branches; leaves petoed,
"arrowed at both ends; stipules triangular or * W, s small, i» axillary spikes, white; bracteoles^2 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
0 «olla, anthers subsessile, linear, connective thickened at the t,
<VpolS connate in a completely or often "completely 9-cell
o«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. PBUTNGA ROXBUROHH DC.; F. B. I. ii. 1»-
<iosa F. I. i. 525. B. polysperma F. I. »• £571
E.Bengal; Sundribuns.
An ^vefgreen shrub, 5-8 feet high. B«V. Pitanga.
421. **Hyptianthera W. & A.**

A glabrous shrub with terete branches; leaves short-petioled; stipules triangular, persistent. Flowers small, white, axillary fascicles; bracteoles small. Sepals connate in a calyx-tube; lobes 5, acute, persistent. Petals 4 or 5, connate in a corolla; tube hairy within; lobes spreading. Stamens 4 or 5; anthers sessile, oblong, obtuse, pubescent and at the base. Dri 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, imbricated, an ovoid or globose berry. Seeds fleshy and plicate; albumen fleshy and small.

982. **HYPTIANHERA STRICTA W. & A.; F. B. I. A.**

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 petioled; stipules triangular, acuminate or lanceolate, small, in short axillary cymes, or fascicled, polygonal or white or greenish; bracteoles connate in a cup under the calyx or orous, or free. Sepals connate in an obconic or hemispheric limb truncate or 4-5-toothed or -lobed. Petals 4 or 5, connate in a short, cylindric or campanulate corolla; lobes spreading. Stamens 4 or 5; filaments short or long; anthers linear, often recurved. Carpels connate in a 2- or 3-celled ovary; ovules 2-3 in each cell, on septal placenta. Seeds few in each cell; albumen fleshy and embryo small.

983. **DIPLOSPORA SINGULARIS** Korth.; F. B. I. 156.

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.
Pavetta

sessile or pedicelled; bracteoles 2 under the calyx or, if flowers ellate, on the pedicel. Sepals connate in an ovoid or turbinate long tube and glabrous or villous throat; lobes narrow, usually long, spreading or reflexed, contorted. Stamens 5, rarely 4, adnate to mouth of corolla; filaments short or 0; anthers narrow-linear, acute, exserted. Petals connate in a 2-celled ovary; ovules generally few or paired or solitary in each cell (in our only species ovules solitary); style stout, usually pubescent; stigma fusiform, usually far-exserted. Fruit a small, globose berry; 1- or more-seeded. Seeds suborbicular or cup-shaped, rarely angular; albumen fleshy or horny; embryo small; cotyledons leafy.

Chittagong.

A large bush or small tree. Beng. Kankra.

424. Pavetta Linn.

Shrubs or small trees, branches terete; leaves opposite, petioled, membranous; stipules intrapetiolar, usually connate in a deciduous sheath. Flowers in axillary or terminal-2-3-omously branched corymbs, rarely capitate; bracteoles small. Petals connate in an ovoid or turbinate calyx; limb short or long, deciduous or persistent; lobes 4, rarely 5. Petals 4, rarely 5, connate in a hypocrateriform corolla; tube slender, cylindric; lobes spreading, contorted. Stamens 4, rarely 5, adnate to mouth throat of corolla; filaments long or short or 0; anthers linear.<style>acutesh</style>ieshy, swollen. Carpels connate in a 2-celled ovary; ovules y in each cell; placentas prominent on septum; style slender; stigma exserted, fusiform. Fruit a small, fleshy berry, th 2 papery, 1-seeded pyrenes. Seeds with membranous testa, ing the cell; albumen horny; embryo incurved, with leafy cotyledons.

Leaves glabrous beneath or nearly so; cymes glabrous; corolla glabrous.

Leaves glabrous or softly or harshly puberulous above, pubescent beneath; cymes tomentose or villous. indica var. tame atom.

Pavetta Indica Linn.; F. B. I. iii. 150; E. D. P. 338.

Ixora Pavetta F. I. i. 385.

Chittagong.

In most of the provinces.
A large bush or small tree. *Seng. Jui; **Sikreb*' sifcerup; 6W«Z. Budhi tiki, budhi ghasit.

425. *Ixora* Linn.

*Cymes* brachiate, with 3-4 slender branches; flowers white or red; *Cymes corymbos* yellow; *Corolla-lobes sessile or subsessile; flowers red or, n«W*.
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**BVHIACEM.**

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 ACUMINATA Roxb.; F. I. i. 383; F. B. L Hi. 137;
E. D. I. 511.
Chittagong.
A stout glabrous shrub.

989. IXORA SPECTABILIS Wall.; F. B. I. iii- 141-
Chittagong.
An evergreen tree.

990. 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-
Chittagong.
A shrub. *My.* Tellu, kurwan; Xol. Pete; Santa*; Merom
met'.

991. IXORA CUNEIFOLIA Roxb.; F. I. i. 380; F. B. I. w. 144.
É. Bengal; Chittagong.
A shrub.

992. IXORA UNDULATA Roxb.; F. I. L 385; F. B. I. m. 147.
Chota Nagpur and Behar, wild. C. and E. Bengal, in
village shrubberies.

993. IXORA OOCOINEA Linn.; F. I. i. 375; F. B. L "**•
Planted in every province; seems wild ir' Chittagoi*
A branching shrub. *Beng.* Bangan, bandhuca (S«»*»*»).

994. IXOBA STRICTA Roxb.; F. I. i. 379; F. B. I. »• 14 j-
Planted in most of the provinces.
A branching shrub.

426. Coffea Linn.

Start., with compressed branches; leave* Y Y Y Y
^Y-ate; stipules broad. *Flowers* axillary, in fasc^les or cymes
or sol^ary; bracteoles often connate. *Sepah* connate

^Y Y

inari

<lyx-tabe; limb short, often glandular, regular y
many-toothed, persistent, T tais J " nake
short or long corolla-tube; lobes spreadmg, contorted.
4-5; fileaments o; anthers narrow, adnate to ^Y 1.
a-throat or 2-celled
4va17; ovule solitary, peltate on the septum in each o
filiform, smooth, with linear or subulate arms. *Rruit* small
^upe with 2 plano-convex or ventrally concave, conaceous,
BENGAL PLANTS.

cartilaginous pyrenes. *Seeds* plano-convex, concave or plano-convex; on the sepal side; albumen horny; embryo short, sterile; cotyledons thin, cordate.

Leaves dull; branches very slender; flowers appearing when leafless; corolla salver-shaped; *seeds* plano-convex, concave or plano-convex; albumen horny; embryo short, sterile; cotyledons thin, cordate.

Leaves shining; branches stoutish; flowers with leaves; corolla salver-shaped.

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993. COFFEA BENGALENSIS Roxb.; F. I. i. 540; F. B. *11.

Chota Nagpur; N. Bengal; Chittagong.

A small shrub.

994. COFFEA ARABICA Linn.; F. I. i. 539; F. B. I. Hoch. C. 1641.

Cultivated sparingly in Chota Nagpur.

A large shrub or small tree. *Hind. Kahwa; Beng-kapi. The Coffee Plant.*

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427. Morinda Linn.

Erect or climbing shrubs or trees; branches round or *hairy*. leaves opposite, rarely ternate; stipules connate, *hairy.*

*Flowers* axillary or terminal, in simple or panicked or jelled; *peduncled heads*, the calyces more or less coherent; *sepal* connate in a short calyx-tube; limb truncate or occasionally *adnate to *Diospyros. 4-celled corolla-throat; filaments short; anthers linear or oblong-swollen. *Carpels* connate in a 2-celled or spuriously ovary; ovules in each cell solitary, ascending from a basal placenta on the septum; style slender, stiguiatic arn long. *Fruit* usually aggregate, of many succulent, *ed calyces, enclosing, numerous cartilaginous or bony, pyrenes, which sometimes cohere into a 2-4-celled rarely a cluster of nearly discrete drupelets. *Seeds* reniform; testa membranous; albumen fleshy or horny terete.

Leaves tomentose on both surfaces, dull green; corolla pubescent. Leaves glabrous, shining (sometimes minutely scaberulous in *M. cajolia*); corolla glabrous. —

*Cilyx-Umb* with often ti foliaceous lobe; fruitgreenish [p. 573] bracteata.
*Calyx teeth all similar:—[p. 572]

Flower-heads distinctly peduncled:—

- Stipules obtuse; corolla-throat hirsute; fruit whitish
- Stipules acute; corolla-throat naked; fruit
- Flower-heads sessile or subsessile

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 BRACETATA Roxb.; F. I. i. 544. M. citrifolia var. bracteata F. B. I. iii. 156; E. B. M. 656.

Sundribs.
A small tree, near the sea-face.  
Beng. Hardi, haldikunch, 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. Daruwaridra.

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; opposite; stipules connate.  
Yellow, sometimes Polygamous, white or greenish, axillary in fascicles or in peduncled corymbs cyme.

Sepals connate in a small obconic or turbinate cyme; limb short, 4-5-toothed, persistent or deciduous.  
Petals 4-5, connate in a funnel-shaped, campanulate or urceolate corolla, with a ring of deflexed hairs inside and with a villous throat.

Stamens 4-5, on the throat or mouth of the corolla; filaments very short or 0; anthers long or ovate.  
Disk swollen.  
Carpels connate in a 2-ovulate ovary; ovules solitary, pendulous in each cell; style stout; stigma 2e
BENGAL PLANTS.

large. *Fruit* a didymous or subglobose, 2-celled drupe, or l*• of
from abortion and reniform or oblòng; pyrenes two, each l-cele
or one 2-celled, or one 1-celled, the other aborted. *Seeds* oblo-
testa membranous; albumen fleshy; embryo elongated with s
ectyledons:

Unarmed shrubs; leaves quite glabrous, as are the branches —
Pyrenes more or less wrinkled or tubercled, rounded on the

Armed with decussate, opposite, rarely ternate, sharp axillary or s
what supra-axillary spines; pyrenes more or less wrinkled or tube-
rounded on the back :—

Leaves quite glabrous, as are the branches............. *anffUstifolium*
Leaves pubescent on both surfaces; branches hispid, pubescent

1000. CANTHIUM DIDYMUM Roxb.; F. I. i. 535; F. B. I. 132
E. D. c. 890.

Behar; Chota Nagpur.

1001. CANTHIUM GLABRUM Bl.; F. B. I. iii. 133.
N. Bengal, Duars.
A small tree.

1002. CANTHIUM ANGUSTIFOLIUM Roxb.; F. I. i. 533; F. B. I. iii. 135.

Sundribuns; Chittagong.

1003. CANTHIUM PARVIFOLIUM Roxb.; F. I. i. 534; F. B. I. iii. 135.

Behar; Chittagong.
A spreading shrub.

429. Yangueria Juss.

Unarmed or spin*y erect shrub, branches leaf
site; stipules connate. *Flowers* small, white or greenish, a
\*Tbnt\* - below the leaves in \*L*
\*Tbnt\* - Connnate in a \*L*
*Globose calyx; \*L*

irnecturate corolla-tube, with a ring of deflexed
hairs inside and a villous or glabrous throat; lobes spreading, at
knob 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-<6<6-wle2>ur 6-celled ovary; ovules solitary, pendulous in each cell; *g*g*j£bi ^gma large. *Fruit* a dry or fleshy drupe or berry, «* «* £ » * mix, with 2-6 pyrenes or a 2-6-celled stone. *Sects* solitary ^*<m* pyren or cell, oblong; testa membranous; albumen fleshy, embryo elongated, with short cotyledons.

**Unannea.**

versed with straight, opposite or ternate spines:—
Leaves ©labrous or nearly so................. h''ii, "irrises
I-eaves tore or less pubescent or tomentose on both . m r ^ ^

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 111 13
K. D. V. 25.
N. and E. Bengal.
A small tree or large bush. *Vernac.* Moyena:

In all the western provinces.
A small tree.

430. **Psychotria** Linn.

Shrubs or small tree, rarely herbs, erect, rarely twining =
opposite, rarely Stately whorled; stipule* " ^ C'
^mate, solitary or in pairs, with often 8 ^ ^ - ^
f'0«, m ta tel'vinali rarely axillary cymes, heads
Wets present or absent. *Sepal*, connate n, » » h « r t ^
^b dually deciduous. P*teb 5, rarely 4 or 6, con con
*aigh, short corolla-tube; throat naked or hairy; w
«*»«*. «, rarely 4 or 6, on the mouth or throat of the C
^be, incl'ueda or exserted; filaments short « long;
oblong or linear. Coiyrf. connate in a 2-celled "^>
*>s,t, erect, solitary in each cell; style short; f ^ T L
"»'U a smaU ovoid, globose or oblong, rarely * J S g J J,
with two 1-seeded, plano-convex pyrenes, rarely sep'
2 weel. *Sad.* plano-convex, the face flat or grooved, testa
albumen hard, sometimes ruminate; embryo small; c leafy.

1006. **Psychotria Adenophylla** Wall. \ F. B. I. &* 1641
Chittagong.
A shrub.

431. Lasianthus Jack.

Shrubs, often fetid; branches terete with compresses leaves opposite, distichous; stipules interpetiolar, s or
Flowers small, in axillary, rarely peduncled, fascicles, c
or oblong calyx-tube; limb persistent, short or long, 3-
3-9-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-

Stipules ovate, acute; calyx-teeth linear, ciliate; coioi
bracts ovate-lanceolate, the outer large and leafy; drupes vi
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
branching terete; leaves opposite, petioled;
short, acute, persistent. Flowers small, in
ovoid calyx-tube; limb persistent; lobes 4-5,
valvate. Petals short, connate in a funnel-shaped, elongated corolla;
Stamens 5, adnate to corolla-throat; filaments short, connate in an ovary, the outer layer of the common-wall
inner; ovules basal, erect, solitary in each
stigmatic arms 5, linear. Fruit a partially
ed from absorption of septa. Seeds 5 or
embrun, testa reticulate, valvate at base; tegmen thick;
HARIILTONIA SUAVEOLENS Roxb.; F. I. i. 554; F. B. I.
197; E. D. H. 13.
Behar; Chota Nagpur.
A small shrub, 4-12 feet high. Kol, Kudia.

433. Paederia Linn.

Fl. twining shrubs, foetid when bruised; branches terete, Petiol
angular, deciduous. Flowers in axillary and terminal,
23. Petals connate in an ovoid or turbinate calyx-tube; limb
valvate with inflexed, crisped edges, often 3-toothed. Stamens
4 or 5, adnate to corolla-tube; filaments 0 or very short;
Kneurb-oblung, obfute. Petals 4 or 5, connate in a tubular or
lobes, 3-toothed, persistently. Paederia flavescens dor-
valvate with inflexed, crisped edges, often 3-toothed. Stamens
4 or 5, adnate to corolla-tube; filaments 0 or very short;
Kneurb-oblung, obftute. Petals connate in a 2-celled
ovary; 2 ovules, one to each cell; style slender;
2, capillary, twisted. Fruit flattened or globose; epicarp
thick, glossy, shining, separating from 2 orbicular or oblong, dor-
pressed, membranous or coriaceous pyrenes. Seeds
pressed dorsally; testa thin, adnate to the pyrene;
large, thin, leafy, corder.
BENGAL PLANTS.

Fruit much compressed; pyrenes separating from a filiform carpel. Fruit subglobose; pyrenes not separating from a filiform carpel.

1011. **Paderia fcelida** Linn.; F. I. i. 683; F. I. i. 195.
E. D. P. 4.

1012. **Paderia Tomentosa** Bl.; F. B. I. iii. 197.
N. Bengal, Duars. A slender twining shrub.

434. **Knoxia** Linn.
Erect herbs or midershubs; stems terete or obtusely quadrangular, with 2 lines of hairs; leaves opposite; stipules connate to petioles in an entire or bristly sheath. Flowers dimorphous; 5-merous or lilac, subsessile on the elongating branches of terminal inflorescence; bracteoles 0. Sepals connate in an ovoid or obovate calyx-tube; limb persistent; lobes 4, subequal to 5, or longer than the others. Petals 4, connate in a corolla-tube and villous throat; lobes valvate with inflexed tips. Stamens 4, adnate to corolla-throat; filaments short; anthers eluded or exserted. Carpels connate in a 2-celled ovary 5-merous or 5, in each cell solitary, pendulous; style filiform; stigma exserted, 2-lobed. Fruit small, of 2 semiterete or dorsally pressed, indehiscent, separating cocci. Seed with membranous testa and thickened funicle; albumen fleshy; embryo axile. Leaves petioled; flowers in corymbs of spikes; ripe fruit falling bodily with the columella from the persistent columella by a basal perforation. Leaves sessile; flowers in compound corymbs; ripe fruit falling away from the persistent columella. 

In all the western provinces. An erect slender annual.

Chota Nagpur, Parasnath. An erect strict herb, 2-4 feet high.
Hydrophyllax Linn. f.

8 succulent herbs with terete branches; stipules sessile; ovate-oblong; stipules connate with the petals. Florets solitary, axillary. Wb persisting in a 4-angled calyx-tube; petals 4, fleshy, connate with a glandular corolla-tube with a ring of hairs within; ovules solitary in a 2-celled ovary, peltately attached to a septal placenta in the deep sulcate face; albumen cartilaginous; embryo straight, subdorsal.

MABITIMA Linn.; F. I. i. 373; F. B. I. ii. 199.

436. Spermacoce Linn.

J branches usually quadrate; leaves opposite; leaves in a broad, truncate bristles. Flowers small or minute, solitary in fascicles, heads or cymes. Sepals connate, or obconic calyx-tube; petals 4, connate in an infundibular valve. Stamens 4, adnate to corolla-throat; filaments short or long; anthers linear. Carpels connate in a 2-celled ovary; ovules in each septal placenta; style filiform; stigma with 2 or capitate. Fruit of 2 coriaceous or crustaceous grooves; which ultimately dehisce. Seed oblong, ventrally thin, often granulate; albumen horny or firmly
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. E. D. S. 2515.
In all the western provinces.
A herb, always procumbent, often perennial-
Madanaghati; *Santal*. Pitua arak'.

437. **Rubia** Linn.
Herbs, erect, diffuse or climbing, hispid, scabrid or per-)
stems slender, quadrate; leaves in whorls of 4-8; stipu-
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, c
a rotate, funnel-shaped or shortly campanulate coro-
valvate. *Stamens* 4 or 5, adnate to corolla-tube; filan-
then globose or oblong. *Carpels* connate in a 2-cel-
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 op-
or whorled; simple or less often compound; stipules 0.
many, small (florets), aggregated in centripetal heads, sflss-
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 recep-
individual florets all tubular (head discoid), or the outer, or
ligulate (head rayed); all 2-sexual or the inner 2-sexual or ma-
the outer female or neuter; sometimes dioecious. *Sepals* conna
COMPOSITE.

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com-posite.

scale(s) connate in a corolla of two forms; (a) tubular or nerves connate in a strap-like epignous. Stamens 4-5, inserted usually free; anthers basifixed, with 4-5 lobed limb valvate with marginal* shanaceous; connective produced; cells simple at the base; pollen sub-globose, rough. Pistil an inferior ovary; ovule solitary, basal, erect, anatropous, nucleus *cinnat. Style slender, normally 2-fid, arms (sometimes naked or pubescent externally, or pubescent cones; margins stigmatic. Fruit a dry, short. embryo straight; cotyledons plano-convex; radicle.

*Corolla of all the flowers tubular to near the mouth, or if any flatly (ligulate) then only the marginal florets of %armS longer distinct, or if vel- short or the style subentire then flowers of heads with dissimilar (heterogamous).

Flowers red, purple, or white, never yellow; all the florets similar and tubular, or rarely (Elephantopus) cleft laterally; involucre of bracts always more than 1-seriate; pappus present, or rarely (Ethulia) absent; receptacle naked or paleaceous:—[p. 582]

Anthers at base and appended at apex; style-arms subulate, hairy; leaves alternate (Vernonia) :

Heads distinct, many-flowered:—

Pappus absent; achenes 4-5-angled Ethulia.

Pappus present; achenes 10-ribbed:—

Pappus short, fugacious Centratherum.

Pappus long, copious Vernonia.

Heads 1- or few-flowered, crowded into dense masses like single heads; pappus chaffy:— Elephantopus.

Anthers subentire at base, either truncate or appended at apex; style-arms obtuse, papillose; leaves opposite (Eupatorium):—

Anthers truncate at apex:—

Pappus paleaceous; receptacle sometimes paleaceous [p. 582].

Ageratum.
§ 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 outer

(Flowers, if similar (homogamous) and tubular, yellow; or, if heterogamous, at least those of the disk yellow; or, if none of the flowers yellow (Laga.scea, Emilia), then with the brae's purple involucre only 1-seriate, rarely (some INULOIPE/E) flowers 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 paleaceous (A tho is ma) or pseudopaleaceous (A steroides); 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, convex, all, or at least those of the disk-florets, in cone (ASTEROIDEA); all the flower-heads heterogamous

Flower-heads without a proper ray; pappus hare or altogether absent:—

Achenes minute, oblong, smooth; pappus a

Achenes flattened or subterete, with a or bristly pappus-ring

Flower-heads with distinct ray-florets:—

Ray-florets ligulate, never yellow, ligules 2-d, pappus long, copious

Ray-florets slender, tubular, or with very short yellow like those of the disk:—

Pappus long, copious

Pappus short, scanty

Anthers clef at the base or rarely (Laggera) without subentire, and if so, with the style-arms of the hermaphrodite florets filiform; style-arms filiform, linear, or a phalloid, or those of the sterile florets undivided (INULOIPE)

H -Female florets, if present, filiform:—[p. 593]

-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 *T. luncas*), 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. **Epaites.**

Flower-heads small, in dense globose or ovoid masses; herbs with winged stems; pappus absent **Sphseranthus.**

- 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, disciforni; receptacle naked; hoary or woolly herbs **Gnaphalium.**

Flower-heads 1-flowered; heads homogamous, crowded in pseudo-paleaceous, axillary common receptacles, the bracts of the involucres 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 with sometimes a few short outer bractlets (calyces with base; heads heterogamous or homogamous; subentire at the base; receptacle naked:—[p. 582] 
Leaves alternately; pappus of fine hairs usually generally copious (SENECIONIDÆE); style-arms of elate "florets truncate or obtuse, penicillate or with tip:—

Heads all homogamous; florets (in our species) with pappus of fine hairs usually copious (SENECIONIDÆE); style-arms truncate, penicillate or shortly appendaged at tip; heads large; flowers showy:—[p. 582] 

Heads rayed, heterogamous; florets all yellow; Leaves opposite; pappus paleaceous or sel ete or not, NIOIDEÆ (IN part); style-arms truncate, penicillate or shortly appendaged at tip; heads small, ray sometimes absent, Pappus present, paleaceous; leaves pinnatisect. 
Pappus absent; leaves entire or dentate; Pappus present, paleaceous; leaves pinnatisect. 

**Ileceptacle paleaceous; anthers subentire at the base of the involucre 1-many-seriate; heads usually radiate, gamous; style-arms truncate or appended, or those sterile florets entire; pappus of 2-4 awns, or PalleCecier, up absent; leaves at the base usually opposite, those big opposite or alternate (HELIANTHOIDEÆ):—[p. 582] 

Anthers free or nearly so; female florets all apert, heads 1-sexual, rarely heterogamous; male florets in globular heads; bracts of the involucre 1-seriate, female florets 2 together, united with the involucrum. 

Anthers united in a tube:—

Heads 1-flowered, in globose clusters; bracts of involucre forming a 5-fid tube; lower or all the leaves site; villous herbs:—[p. 586] 

Heads many-flowered:—

Pappus consisting of only 1-4 bristly awns, or cup or absent:—[p. 586] 

Corollas of the fertile florets persistent on the pappus of 1-3 awns; leaves opposite 

Corollas of all the florets deciduous:—

Achenes all thick, or those of the ray-florets thorned, and those of the disk laterally 

Corollas of the fertile florets persistent on the pappus cup-like or composed of 2-3 stiff, chan 

bristly awns with or without intermediate:
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-angled:—

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.**
BENGAL PLANTS.

{Achenes more or less depressed from the top; pappus of 2, rarely 3-4, bristles, or absent. Outer bracts of the involucre almost pellucid; inner bracts separate, almost the scales of the receptacle; ray-nore leaves opposite:—

Achenes almost 4-cornered, without but crowned by the densely corolla, Achenes flat, margins lacerate, ant pappus present, composed of bristles.

Outer bracts of the involucre few, jmag bracts connate below, membranous:—

Style-arms truncate, penicillate, or ci a short appendage:— florets
Leaves alternate, pinnatisect; florets sterile; achenes with 2-4 s ultimately finely serrulate on inner

Achenes more or less beaked Bide

Achenes not beaked.............GioSSocardiata

Style-arms ending in a long, shor appendage; ray-florets fertile :—

Achenes long, crowned with 2-3, sistent bristles; leaves mostly radica

Achenes without awns; leaves niosi scattered.........Chrysanths

Pappus of numerous scales; heads radiate, opposite:—[p. 584]

Scales of pappus oblong, chaffy; heads very

tfPappus of short scales sometimes present [p. 587] Chrysanthem
COMPOSITE.

S-Flower-heads discoid, heterogamous; pappus absent:—[p. 586]
-Flowers 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

Heads subsessile:

Bracts of the involucre 2-seriate, spreading in fruit

Centipeda.

Bracts of the involucre 3-4-seriate, incurved in fruit

Sphseromorphasa.

Florets of the circumference few; achenes obovate or rounded at top; flower-heads very small, in racemes or panicles

Artemisia.

Filaments generally spinescent (CYNAROIDE, E) :— [p. 581]

Echinops.

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:—

Biflats 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.

Cobs of all the florets flatly expanded from a tubular base (ligulate);
BENGAL PLANTS.

ligules 5-toothed; anthers cleft at base, rarely appendage
leaves radical or alternate; stem always herbaceous, fistu|o
(CICHORIE^]) :— [p. 581]

Pappus of scales, with sometimes alternating hairs, or |

achenes truncate; florets blue ........................................
Pappus of hair-like bristles, at least in the central florets |

florets yellow: —
Pappus-hairs feathery; achenes contracted at both |

rugose .................................................................
Pappus-hairs simple: — ribbed; ribs

Achenes beaked and also contracted at the base,
rugose or smooth: —

Achenes fusiform or oblong, rarely shortly cy 1
slender, glabrous, or puberulous

Achenes compressed or flattened, ovoid, oblong, 01

Achenes not beaked: —
Achenes narrowed at base, truncate at apex: —

Achenes oblong with 4-5 rugose ribs

Achenes compressed, many-ribbed; ribs smooth

Achenes truncate at base as well as at apex ..........

438. Ethulia Linn.

Branching herbs; leaves alternate, penninerve d, 8te ;
FZower-heads small, homogamous; involucre subcann
bracts many-seriate, imbricate; receptacle flat, naKe
limb 0. Petals 5, connate in equal, regular, slender,
corollas; limb campanulate; lobes narrow. Stavie*
genesious; anthers obtusely auricled. Style with
puberulous arms. Cypsela glandular between the p

1019: ETHULIA CONYZOIDES Linn.; F. B. I. iii 227 <
F. I. iii. 413.

E. Bengal; Tippera.
An erect, glabrous or puberulous leafy annua


Branching herbs, erect or diffuse; leaves alternate, 8

toothed. FZower-heads homogamous; involucre subhemisp
bracts many-seriate, inner dry or scarious, outer herbaceous leafy; receptacle flat, naked or pitted, Calyx-Mmh short.
Ve
monia.-] COMPOSITE.

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con">ate in equal, regular, slender, tubular corollas; limb Gam-
Patmatote; lobes narrow. Stamens 5, syngenesious; anthers
obtusely auricled. Style with subulate, puberulous arms. Cypselae
8-10-ribbed; pappus short, scabrid, fugacious.

1020. CENTRATHERUM ANTHELMINTICUM 0. Kuntze. Serratula
danthelmintica 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
erinate, entire or toothed. Flower-heads terminal or axillary,
solitary, cymose or paniculate, homogamous; involucre ovoid,
B^bose, or hemispheric, as long as the flowers or shorter; bracts
many-seriate, the innermost longest; receptacle naked or pitted
besides shortly hairy. Calyx-limh of biseriate setae. Petals
connate in equal, regular, slender, tubular corollas; limb cam-
p^ulose or narrow; lobes narrow. Stamens syngenesious;
anthers with obtusely auricled base. Style with subulate, pube-
rous arms. Cypselae striate, ribbed or angled, rarely terete;
p^pus 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 10-50-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. f^guna.

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 BRACETATA Wall.; F. B. I. iii- 232#
N. Bengal, Duars.
A rigid, sparingly branched undershrub.

1024. VERNONIA ROXBURGHII Less.; F. B. I. iii- 2di. Eupat-
torium asperum F. I. iii. 415.
Behar; Chota Nagpur.
A rigid, sparingly branched undershrub.

1025. VERNONIA CINERERA Less.; F. B. i. iii. 233; E
In all the provinces.
An erect, rarely decumbent, annual weed.
• shim, kala-jhira; Santal. Darya arak, birlopong »
jhurjhuri.

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. Elephantsopus Linn.

liigid herbs; leaves alternate or radical, entire 01 ^ ^ j ;
iYozoe-heads 2-5-flowered, homogamous; involuce comp1 ^ ^
bracts about 8, dry, stiff, alternately flat and condupicate; ^^
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 base. Style with subulate, minutely Puberulo1 ^ ^
Cypsela truncate, 10-ribbed; pappus of rigid, shining
slender throughout or dilated and chaffy below.

1028. Elephantsopus SCABER Linn.; F. I. iii. 445: *,
iii. 242; E. D. E. 80.
In all the provinces.
A rigid, dichotomously branched, scabrid herb.
Sawdulun; Beng. Samdulun; Santal Manjur
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.


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.


An annual herb. *Beng.* Oochunti.

444. **Eupatorium** Linn.

Herbs, undershrubs or shrubs; *leaves* opposite, rarely alternate. *Flower-heads* homogamous, corymbose; involucre oblong, ovoid, catanpanukte 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, tubular corollas; limb 5-lobed or -toothed. *Stamens* syngenesious; anthers appended with obtuse bases. *Style* with long, obtuse arms. *Cypsela* truncate, 5-angled or 5-ribbed; *Pappus-hairs* 1-seriate, numerous, rigid, scabrid.
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.

Cultivated in C. and E. Bengal.

A herb. Vernac. Ayapana (from its American name).

1032. EUPATORIUM ODORATUM Linn.; F. B. I. 244.

Cultivated sparingly in C. and E. Bengal.

A coarse herb.

445. Mikania Willd.

Herbs or shrubs, twining or rarely erect; leaves petiolated. Flower-heads small, homogamous, usually spicate, racemose, or paniculate; involucre oblong, narrow, with often a smaller outer one; receptacle narrowly oblong, often shortly annular, of connate hairs, connate in equal, regular, slender, tubular corollas; panulate, 5-fid. Stamens syngenesious; anthers with obtuse bases. Style with long, acute arms. Caryopsis 5-angled; pappus-hairs many, 1-2-seriate, often coiled at the base.

1033. MIKANIA SCANDENS Willd.; F. B. I. 244.

C. Bengal, locally quite naturalised.

A twining herb with long-petioled, opposite leaves.

446. Cyathoclaine Cass.

Erect, annual, scented herbs; leaves alternate, petioled. Flower-heads small, heterogamous, not rayed, paniculate; florets female, many-seriate, fertile; disk-florets hermaphrodite, but usually sterile; involucre hemispheric; bracts subulate, lanceolate, acute, with scarious margins; receptacle elevated, a contracted base and naked concave top. Caryopsis 5-angled; of female florets connate in filiform corollas, rather shorter style, with 2-toothed limb; of hermaphrodite florets regular tubular corollas, with narrowly campanulate, 5-fid. Stamens syngenesious; anthers with truncate, entire, or subentire.
COMPOSITE.

447. Grangea Forsk.

An annual herb.

448. Erigeron Linn.

Annual or perennial herb with leaves in radical and 1-headed or with slender, erect or decumbent, much-branched or with alternate leaves. Floret-heads heterogamous, rayed, or corymbose or paniculate; ray-florets female, 2- or 3-seriate, fertile; disk-florets hermaphrodite, fertile, or rarely sterile; involucre hemispheric or campanulate; bracts subseriate, numerous, narrow; receptacle nearly flat, naked, or occasionally pitted or minutely paleaceous. Calyx-Mnh with or bristles. Petals of female florets all connate in narrow, corymbose corollas, or the inner female florets sometimes filiform with subentire limb; of hermaphrodite florets 5, rarely 4, connate regular tubular corollas, with a very shortly 5-, rarely 4-toothed...
BENGAL PLANTS.

Stamens syngenesious; anthers with entire, flattened bases. Style of hermaphrodite florets with wore or flattened arms, with triangular or oblong, apical, acute or obtuse appendages. Cypsela compressed, usually narrow, margins form; pappus a single or double row of bristles, the present, of fewer and shorter setae.

1036. ERICKRON ASTEROIDES Roxb.; F. I. iii. 254; E. D. B. 276.
In most of the provinces.
A coarse annual, 1-2 feet high.

Herbs; leaves entire, toothed, or less often pinnate, Floerheras heterogamous, disciform, corymbose rarely solitary; outer flowers female, pale, 2-many-hermaphrodite, yellow, all or mostly fertile; involute anthers, with triangular or oblong, apical acute appendages. Cypsela minute, compressed; pappus single or double row of bristles, the present, of fewer and shorter setae.

Pappus white; stems little branched; bracts of the involucre linear; leaves obovate-spathulate or oblanceolate, the margin entire or acutely lobed or cut; achenes glandular.

Pappus reddish; stems much branched; bracts of the involucre firm, lanceolate:
Leaves lanceolate, narrowed to both ends, the margin serrate; bracts of the involucre with scarious, glabrous margins.

Leaves from narrow-linear to spatulate-obovate, rarely pinnatifid; bracts of the involucre herbaceous.

J037. CONYZA SEMIPINNATIFIDA Wall. J F, B, I. E. Bengal; Sundriabns.
A stout-stemmed annual herb,
CONYZA VISCIDULA Wall.; F. B. I. iii. 258. Behar; N. Bengal; Chittagong.

A fastigiately branched, pubescent herb.

THESPIS DIVARICATA DC.; F. B. I. iii. 259. E. Bengal; Tippera. A robust weed with spreading branches.

A fastigiately branched, pubescent herb.

THESPIS DIVARICATA DC.; F. B. I. iii. 259. E. Bengal; Tippera. A robust weed with spreading branches.

Blumea DC.

CONYZA VISCIDULA Wall.; F. B. I. iii. 258. Behar; N. Bengal; Chittagong.

A fastigiately branched, pubescent herb.

THESPIS DIVARICATA DC.; F. B. I. iii. 259. E. Bengal; Tippera. A robust weed with spreading branches.
Herbs:—[p. 597]

**Heads** solitary and.

Corymbose; florets J, lov., erect, or an- tero-sulcate on the ends of the branches, or ft.* Lobes of the hermaphroditic corolla yellow; receptacle glabrous or hairy.

W^

**Heads** mono- or polytraced, paniculate or in a short, dense, oblong spikes or con-

**Corymbose** J, J, I, P, ovate, f. 2-3 mm.

florets J, lov., erect, or suberect, very easy, or leaves of the hermaphroditic corolla yellow; receptacle glabrous or hairy.

W: >corymbose, or in short, dense, oblong spikes or con-
or serrate, rarely lobulate, upper toothed; achene glabrate, \textit{lacera}.

Stems always simple, with few leaves, densely villous or silky; achenes hairy. Heads in open corymbs or panicles with divaricate branches, always yellow; achenes always 8–10-ribbed, more or less hairy.

Stems branched from the base; pubescent or laxly villous; the lower leaves runcinate, lyrate, or subpinnatifid; involucre 	extit{crevis-crisp}.

W e s on upper part of stem few, large, lacinate; receptacle Pubescent; lobes of hermaphrodite corolla hairy; Tomar turbid, irregularly coloured; involucr solitary.

Leaves on upper part of stem WV \textit{membranacea}.

Stem simple below, branched above; a villous herb with soft hairs, the lower leaves obovate, lanceolate, coarsely serrate, upper toothed or lacerate; bracts of involucr pubescent; achenes silky. 

Shrubs or small trees; flowers yellow; pappus red; heads papery, \textit{myriocephala}.

A small tree, with stout, villous, or silkily woolly stem leaves coriaceous, silkily woolly, elliptic- or oblong-lanceolate. J*

short, usually auricled petiole 

1041. BLUMBA AMPLECTBNS DC.; F. B. I. iii. 260.
C Bengal; Sundribus.
A small bushy herb.

1042. BLUMEA BIFOLIATA DC.; F. B. I. iii. 261. Conyza
F. I. iii. 431.
C. Bengal.
A small bushy herb.

1043. BLUMBA OXYDONTA 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.
1046. *BLUME A GLOMERATA* DC.; F. B. I. iii. 262.

*fistulosa* F. I. iii. 429.

In all the provinces.

An erect, rather slender, much-branched herb.

1047. *BLUME A LACERA* DC.; F. B. I. iii. 263; E. 3 n.

*Conyza lacera* F. I. iii. 428.

In all the provinces.

An erect herb. *Hind.* Kukkurbanda; *Beng.* Kukur-
sunga, bara-suksung, bara-koksing.

1048. *BLUME A HIERACIFOLIA* DC.; F. B. I. iii. 263.

Chittagong.

A robust or slender, simple herb, with often scape-
stems.

1049. *BLUME A LACINIATA* DC.; F. B. I. iii. 264. *Conyza lacim*

F. I. iii. 427.

In all the provinces.

• A tall erect herb.

1050. *BLUME A MEMBRANACEA* DC; F. B. I. iii. 265.

*diffusa* F. I. iii. 429.

In all the provinces.

A tall, erect, usually much-branched herb.


Chota Nagpur.

A tall coarse herb.


*lanceolaria* F. I. iii. 432.

Chittagong.

A shrub, stems as thick as a finger.

1053. *BLUME A BALSAMIFERA* DC.; F. B. I. iii. 270; E."D- 3 r. ^ .

*Conyza balsamifera* F. I. iii. 427.

Tippera; Chittagong.


452. *Laggera* Sch.-Bip.

Annual or perennial herbs; leaves alternate, often rigid a nd
decurrent. Flow-er-heads heterogamous, disciform, yllo,
panicled or axillary; outer florets female, many-seriate, hermaphrodite, many-seriate; all fertile; involucre campanu
bracts many-seriate, narrow, often rigid, the outer shorter; recep-
tacle flat, naked. *Calyx-Muxh* setose. Petals of female florets
Pluchta.  
COMPOSITE.

innate in filiform corollas, with minutely toothed mouth of her-
aproductive 5, connate in regular, slender, tubular corolla, with slightly enlarged filial limb. 
Stamens 5, often sajttate at base, but not tailed. Style J, te florets with flattened or almost filiform arms. 
Cupsea aubtereto or angled, ribbed or not; pappus 1-scriate, slender, often aduous.

Stamens ty, J, limb, 
Style flat.

Pet florets yellow; stems very slender, not winged; leaves half-em 
jng 

Leafy wings of the stem not entire and continuous; leaves decurrent on the stem at their base:— ...alata.

Leafy wings of the stem all entire and continuous .. toothed, 

Wings extending throughout the stem but deeply interrupted; leaves entire at base

Wings very shortly decurrent from the leaves, which the base

1054. LAGGERA KLAVA Benth.; F. B. I. iii. 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,ja
F. I. iii. 430.
N. Bengal; Chota Nagpur.
A stout leafy herb.

1058. LAGGERA PTERODONTA Benth.; F. B. I. m. Chota Nagpur, rare.
A slender herb.

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.


Sh^s) rare, y herbs, tomentose or glutinous; Umm a or lime, Quter 
W^r-heads heterogamous, disciform, white, y*** >
a*, in terminal leafless corymbs of large and^sub o, Wa j 
florets female, many-seriate, fertile; Inner florets he:
w, sterile; involucre ovoid or campanulate; biact, hroad, dry, rigid; receptacle flat, naked. W""imb setose
^srf. of female florets connate in filiform corollas, shorter
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; pappus 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-

Conyza corymbosa F. I. iii. 426.
Sundribuns.

454. Epaltes Cass.
Herbs; leaves alternate, usually decurrent. Flower-head 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-ypsela of female florets subterete, 5-10-ribbed; pappus 0; of 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. *Wr-heads small, heterogamous, disciform, in 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
COMPOSITE.

Sphäranthus africanus Linn.; F. B. I. iii. 275. S. indicus F. I. iii. 446.

C and E. Bengal; Sundribuns.

Sphäranthus indicus Linn.; F. B. I. iii. 275; E. D. S. 2518. S. mollis F. I. iii. 446.

In all the provinces.


456. Athroisma DC.

Apubescent annual; leaves alternate, for pubescent annual; leaves alternate, for
mglabośe or ovoid terminal, peduncled clusters that are
Verfloral heads small, heterogamous, disci-
Wterm inal, peduncled clusters that are
inner receptive; receptacle cylindrical, with
the palescence, bracts ; receptacle cylindrical, with
involutrbracts but longer, enclosing
nat embracing, in regular tubular corollas, with campanulate, tate
florets con- 2-3-toothed apex; of hermaphrodite
or con
c 4-loped bracts of female florets con
florets hermaphrodite, very numerous, all fertile;
the 4-lobed
vauricles connat with short flattened very obtuse arm - Cypselas black,
convex outer and flattened inner face, margin ciliate; pappus
snort, stellately spreading, fimbriate corona.


Behar; C. and E. Bengal.

A viscid annual weed.
457. Gnaphalium Linn.

Hoary or woolly herbs; leaves alternate, quite entire. Heads small, heterogamous, disciform, in terminal or a corymb or fascicles; outer florets female, 2- or more-sieriate, inner fewer, hermaphrodite, all fertile; involucre ovoid panulate; bracts many-seriate, all scarious, or with a yellow, or brown, more or less scarious lamina; receptacle or pitted. Calyx-limb setose. Petals of female florets filiform corollas, 3-4-toothed at apex; of hermaphrodite connate in regular, slender, tubular corollas, with dilated, o-limb. Stamens syngenesious; anthers with sagittate base with slender tails. Style of hermaphrodite florets with true or capitate arms. Cypsela oblong or obovoid, smooth; 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
    Utēo-alhum var. multiceps.
    Stems corymbose ly branched above; heads pale brown
    Utēo-alhum var. pallidum.

Heads leafy:—
    Heads arranged in simple or branched leafy spikes
    Utēo-alhum var. indicum.
    Heads in rounded axillary or terminal leafy clusters:—
    Densely woolly; leaves small, spathulate; bracts of the lanceolate, green with straw-coloured tips
    Utēo-alhum var. pallidum.
    Sparingly cottony; leaves obovate-spathulate, rather large.
    Bracts of involucre broadly oblong, with glistening coloured tips
    Utēo-alhum var. pallidum.

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.
    In all the provinces,
    A slender cottony weed.
**COMPOSITE:**

   - In the western and northern provinces.

   - *N. Bengal.*
   - A flaccid, green, annual weed.

458. *Cesulia* lloxb.

A glabrous marsh-herb; has alternate, serrulate. *Florets* axillary, involucrate balls, each sessile on a broad, convex mon receptacle, and each 1-flowered; involucral bracts either keeled or winged, ultimately adnate to and enclosing the *cypsela.* Calyx-limb obsolete. Petals 5, connate in a tubular cup with deeply cleft, campanulate limb. Stamens syngenesious; anthers with a sagittate base; tails branched. Style with linear, cuneate subtruncate arms. Cypsela included in the compressed bracts; pappus 0.


An annual or perennial, glabrous or hairy herbs; leaves alternate, or toothed, upper stem-clasping. Flower-heads heteromeroous and rayed, or from absence of ray homogamous and disciform solitary or on leaf-opposed peduncles, woolly; ray-florets when present 1-2-seriate, female, disk-florets bisexual, hermaphrodite, all fertile; involucre campanulate; base narrow, inner scarious, outer shorter, hermaphrodite florets 5, connate tubular, slender corollas, with hardly dilated, 5-toothed limb. Stamens syngenesious; anthers with sagittate base; tails subdivided. Style of hermaphrodite florets with flattened arms, upwards obtuse or truncate. Cypsela small, hardly tip rounded; pappus-hairs 5-many, 1-seriate, smooth or ciliate, sometimes mixed with small, chaffy scales.
Leaves lanceolate or oblong-lanceolate, acuminate, entire or glandular, often scabrid above; bracts of the involucre hardly recurved, rigid annual, pubescent and viscid or glabrate.

Leaves oblong or linear-oblong, obtuse or subacute, serrate, bracts of the involucre squarrose, their tips filiform, recurved rather stout, woolly, or softly hairy herb.


Tirhut; Behar; Chota Nagpur.
A slender, rigid, usually branching, leafy annual.

1069. VICOA VESTITA Benth.; F. B. I. iii. 297.

Tirhut; Behar; N.Bengal.
A softly woolly or hairy herb.

460. Pulicaria Gaertn.
Annual or perennial, usually woolly or villous herbs, alternate, sessile, often stem-clasping. Flowers usually woolly or villous, gamose and rayed, or from absence of ray florets disciform, solitary; ray-florets female, 1-2-seriate; numerous, hermaphrodite, all fertile; involucre hemispheric, obconic; bracts few-seriate, narrow, acuminate or awned, bristles flat or subconvex, pitted. Calyx-limb irregularly lobed. Petals of ray-florets connate, narrowly ligulate, or in a 2-3-toothed, oblique, short tube, or 0; of hermaphrodite florets connate in regular, slender, tubular corollas, with narrow 5-fid limb. Stamens synangigenous; anthers sagittate base; tails very slender, simple or branched. Hermaphrodite florets with linear, slightly flattened, obtuse Cypselae terete or ribbed; pappus double, outer of short, inner of smooth, scabrid or bearded, filiform or hairs.

Bracts of the involucre almost setaceous; leaves with a contracted half-stem-clasping base; ray-florets tubular; achenes hairy.

Bracts of the involucre herbaceous, lanceolate; leaves with ft base; ray-florets usually ligulate; achenes glabrate.

1070. PULICARIA FOLIOLOSA DC.; F. B. I. iii. 298; E. P.
COMPOSITE.

PULICARIA ANGUSTIFOLIA DC.; F. B. I. iii. 299.

Chota Nagpur.
A softly pubescent annual.


Annual or perennial herbs, often glaucous, glabrous or hairy; ra\textit{q}\textit{i}cal leaves crowded, petioled, entire, toothed or lyrate-pinnatifid; ca\textit{u}\textit{l}i\text{ne} few, stem-clasping. \textit{Flotver-hemds} hoinogamous, disciform, fellow or red, long-peduncled, solitary or laxly corymbose, not br\textit{a}cteate at base; florets all hermaphrodite, fertile; involucre \textit{c}"\textit{y}lindric; bracts 1-seriate, equal, free or connate, striate; recep-\text{ta}le flat, naked. \textit{Calyx-limb} setose. Petals connate in tubular \text{co}\text{\textit{r}}o\textit{U}a\textit{b}, with long, cylindric limb, slightly 5-fid at the apex. \textit{ Wyniens} syngenesious; anthers with subobtuse, entire bases. \textit{Vf}yk with subterete arms, tips short obtuse, or long acute. \textit{VP*ela} subterete, or angled and 5-ribbed; pappus-hairs copious, \text{wh}ite, soft, slender.

1072. EMILIA SONCHIFOLIA DC.; F. B. I. iii. 336. \textit{Cacalia son-\textit{ch}i\text{foli}a} F. I. iii. 413.

In all the provinces.
A glabrous weed. \textit{Beng}. Sadi-modi.

462. Senecio Linn.

\textit{Herbs}, undershrubs or shrubs; leaves radical or alternate, e\textit{nt}ire or variously divided. \textit{Flower-he\&ds} heterogamous, usually \textit{yellow}» solitary, corymbose or racemose; outer florets rayed, \text{fe}male, rarely 0; disk-florets hermaphrodite, all fertile; involucre \text{v}a\textit{g}\text{\textit{i}u}e; bracts 1-seriate or sub-2-seriate, equal, erect, free or e\textit{ni}i\text{ui}e at base, with few or many, very short outer ones; recep-\text{ta}de flat or convex, naked, pitted, or fimbriate. \textit{Calyx-limb} setose. Petals of ray-florets connate in ligulate corollas, the blade l\text{ar}ge or\textit{\textit{o}small}; of hermaphrodite florets connate in regular tubular l\textit{\textit{O}r}ollas, with a narrow, shortly 5-toothed, or a campanulate, c-cleft lim\text{\textit{\textit{d}}}l. \textit{Stamens} syngenesious; anthers obtuse or auricled or minute\text{ly} tailed at base. \textit{Style} of hermaphrodite florets with Recurved arms, tips truncate and penicillate, rarely rounded, or \textit{\textit{h}a} short, narrow point. \textit{Cypaela} subterete, or those of outer ttorets dorsally compressed, 5-10-ribbed; pappus-hairs copious or sparse, soft, white, smooth, scabrid or bearded.
KENGAL PLANTS.

Disk-florets with a campanulate limb; leaves irregularly renulate,^renulate,\nlobulate or toothed; bracts of the involucre oblong, acute,^achene^lobulate or toothed; bracts of the involucre oblong, acute,^renulate,\npuberulous.…………………………………………………………………….^renulate,\nDisk-florets with a slender tubular limb; leaves pinnatifid,^br^br of the\ninvolute linear-lanceolate; achenes scabrid \n\n1073. SENEcio NUDICAULIS Ham.; F. 33. I. iii. 340.\nChota Nagpur; N. Bengal, Duars. \nA slender or stout, usually scapigerous herb, 3 feet high.

1074. SENEcio TETRANDRUS Ham.; F. B. I. iii- \nN. Bengal, Duars. \nA weak, straggling weed, 4 to 8 in. high.

463. Flaveria Juss.
Glabrous or minutely pubescent herbs; leaves opposite, pinnately divided, rarely serrulate. Flower-heads heterogamous, with few hermaphrodite florets, or homogamous with maphrodite florets, or occasionally with a solitary fenial maphrodite floret, all fertile: narrow, sessile, secund cymes or fascicled, floral leaves sometimes involucrate, of 2-4 elongated, subequal bracts, with occasionally outer; receptacle small, naked. Calyx-limb obsolete. female florets connate in ligulate corollas, with small, syngenesious; anthers with entire, obtuse bases. Cypsela oblongi raised ribs; pappus 0.

1075. FLAVERIA REPANDA Lagasc.
W. Behar, rare. \nAn introduced weed; slowly spreading eastwa 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 only ray-floret, rarely ray-florets quite absent and heads gamous, florets aU fertile: small or large, longpedunc
COMPOSITE.

J involucre cylindric; bracts 1-seriate, equal, connate or beyond, occasionally with a solitary outer bract; ray-florets connate in a ligulate corolla, with floral bracts 1-seriate, equal, connate or pitted, nmbrillate. Calyx-limb pale-flattened, entire or 2-lobed lamina; of hermaphrodite connate tubular corollas, with a usually enlarged, 5-fid limb.


tets unarmad .......................................................... strianariuin. 

TAGETES PATULA Linn.; E. D. T. 17.

In all the provinces; cultivated, but often also as an escape.


465. Xanthium Linn.

alt. miUa* coarse herbs, unarmed or with 3-fid spines; leaves lanceolate, toothed or lobed. Flower-hesAs monoecious, female flowers in the upper axils; involucre of hermaphrodite heads few, 1-2-seriate, narrow; receptacle cylindric pales enclosing the flowers; involucre of female head ra
tacts connate as an ovoid, 2-beaked, herbaceous utricle hooked bristles, and sometimes of a few small, free, outer bracts. Calyx-limb obsolete. Petals of hermaphrodite florets 5, connate in a tubular inflated, 5-toothed limb. Stamens of hermaphrodite flowers, with numerous 3-fid spines.................. spinotuta.


In all the provinces.
BENGAL PLANTS.

A coarse, unarmed annual, with bur-like heads.
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; leaves opposite or verticillate, terminal, and peduncled, or in corymbose 1-flowered; florets hermaphrodite, fertile; involucre tubular, conic bracts; receptacle minute. Calyx-limb irregular, serrate. Petals 5, connate in a shortly tubular corolla, with others cylindric 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 opposite or 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 dry, becoming gradually shorter from within outswards, conic or ultimately cylindric, paleaceous. Calyx-lobes of female ray-florets connate in a spreading, sessile or shortly tubular below; of hermaphrodite regular tubular corollas, with a slightly enlarged, cylindric, 5-lobed limb. Stamens syngenesious; anthers entire. Style with elongated, obtuse or subtruncate arms, hairy. Cypsela narrow, striate, compressed or 3-quecated or with the angles produced into 1-3 aristate teeth.
PAUCIFLORA Linn. in gardens in every province, but occasionally also paging up subspontaneously. Annual. Zinnia clegans, another species common in gardens, does not show the same tendency to up spontaneously.

468. Siegesbeckia Linn.

Head, 1

Heads heterophyllous, composite, toothed. Florets subradiate, yellow or white; ray-florets female, many-seriate, fertile; disk-florets hermaphrodite, fertile or sterile; involucre campanulate or campanulate 5-fid, or narrow 3-4-fid, enclosing the ray-florets; receptacle oblong, concave pales. CaZJ-limb obsolete, florets connate in short-tubed corollas, with 2-3-fid limb or of 3-5 lobes connate in short-tubed corollas, with 2-3-fid limb.

Style of herb.

Stamens 5, petals of hermaphrodite florets connate in regular tubular limb. Stamens syngenesious; anthers with entire base.

Glandular-pubescent herb.

469. Enhydra Lour.

Flower-heads globose-marsh-herbs; leaves opposite, sessile.

Axillary, 4 foliaceous at or in the alternate, hetero-ray-florets female, many-seriate, fertile; involucre campanulate 5-fid, enclosing the flowers, tipped with glandular hairs, Calyx oblong, petals shorter than their styles. Petals of ray-florets connate in regular tubular limb. Stamens syngenesious; anthers oblong, obtuse > entire base. Style of hermaphrodite florets ootiose 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-
Hingtsha repens F. I. iii. 448.
C. and E. Bengal.

WO. Eclipta Linn.
Annual herbs, strigose or hirsute; leaves opposite. Flower-
heads small, peduncled, heterogamous, ray-florets female, sub-2-seriate, fertile or sterile; disk-
Florets hermaphrodite, fertile; involucres wide-campanulate;
- herbaceous, the outer larger and broader; -eoeptacle 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 
Battened arms with short or triangular obtuse appendages - off ray-florets triquetrous, often empty; of disk stouter, iatral Uy subcompressed; apex entire, toothed or 2-aristate.

1083. Eclipta ALBA Hassk.; F. B. I. iii. 304; E. P. E-
prostrata F. I. ia. 438.
In all the provinces.
A slender, diffuse or suberect weed. Hind- Moch, kand, bhangra, babri; Beng. Kesari, kesuti; Vr Kesarda; Santal. Lai kesari.

Wi. Blainvillea Cass.
Scabrid or villous herbs; leaves opposite or the upper alternate, petiolate, toothed. -PVower-heads small, subsessile or peduncled. terminal or axillary, heterogamous, rayed or subdisciformi; outer florets female, 1-2-sericiate, disk-florets hermaphrodite, all fertile-
broadly ovoid or subglobose; bracts few, outer her-
inner gradually passing into the rigid, membranous, con-
limb setose. Petal of female florets oonnate in a small, 2-3-toothed ligules, of obsolete; of hermaphrodite florets connate *
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COMPOS
BENGAL PLANTS.

1096. WBDELLIA SCANDENS Clarke. *W. biflora* F. B. I.

*Verbesina scandens* F. I. iii. 441.

Sundribsus.

A large shrubby climber, near the sea-coast.


*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 entire, petioled, entire or 3-lobed. *Flower-heads* large, long, thickened peduncles, heterogamous, rayed; ray-neuter; disk-florets hermaphrodite, fertile; involucre or wide-campanulate; bracts 2-seriate, slightly unequal, rigid and striate, close-set below, wider and leafy above; receptacle pales folded, striate, aristate, embracing the hermaphrodite flowers. *Calyx-*aristate. *Petals* of ray-florets connate large, spreading, entire or somewhat 2-toothed, yellow ligules; disk-florets connate in regular tubular corollas; tube slightly tracted above the base, villous; limb elongated, cylindric, 5-toothed. *Stamens* syngenesious; anthers with entire base. *Style* of hermaphrodite florets with arms ending in linear-lanceolate, pappus of 2 aristae, deciduous or persistent, with numerous venying, persistent scales.

1088. TITHONIA TATEGIFLORA 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, fertile, sometimes from absence of ray homogamous; involucre or wide-campanulate; bracts 2-many-seriate, membranous or baceous, obtuse or acute; receptacle flat or convex;
COMPOSITM.

613

Spilanthes.]  

infolded, tate p. C  

h ermaphrodite flowers. Calyx-limb, aris- 

c ollate in  

arising t  

ray-florets connate in large, spreading, ligulate 

lamina; of hermaphrodite florets con- 

5-fid limb  

of ray-florets connate in large, spreading, ligulate 

lar corollas, with elongated, enlarged, shortly 

2-loh G, of hermaphrodite florets with arms ending 

in short obov. Style of hermaphrodite florets ending 

pet. Style ending in short appendages. Cypsela oblong or nearly 

compressed, or slightly 4-angled; pappus of 2 

1-2 1) of pappus of 2 

paleaceous below, caducous, sometimes with 

smaller, intermediate, caducous bristles.

Roots 8 not tuberous 5 annual herbs:—

Leaves and stems scabridly hairy. annuus.

Helianthus Annuus Linn.; E. D. H. 74.

In gardens in all the provinces; cultivated only.

A tall annual, occasionally cultivated also as an oil-seed 

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. Safed 

surajmukhi. The "Rains" Sunflower.

Helianthus Tuberousus Linn.; E. D. H. 88.

In gardens generally.

A perennial herb with tuberous, edible roots. Beng. 

Brahmokha. The Girasole, or Jerusalem Artichoke.

Annual herbs; leaves opposite. Flower-heads usually long- 

uncled, axillary or terminal, heterogamous and rayed, or 

gomous and disciform; ray-florets, when present, female, 

eriat<i; disk-florets hermaphrodite, all fertile; involucre ovoid 

canpanulate; bracts sub-2-seriate; receptacle convex, elon-

Pales enclosing the florets, often connate with the ovary as a 

wh  

Petals of ray-florets connate in a 

ite or yellow ligulate corolla; of hermaphrodite florets regular, 

with a 4-5-fid limb. Stamens syngenious; anthers with
BENGAL PLANTS.

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.

Chota Nagpur; N. Bengal; Chittagong.

Annual herbs; leaves opposite or the upper alternate. FloW er-heads peduncled, axillary and terminal, heterogamous, ray-ray-florets 1-seriate, female; disk-florets hermaphrodite, fertile; involucre campanulate; bracts sub-2-seriate; outer sub-foliaceous, inner passing into pales; receptacle convex or c conic; pales flat, scarios. Calyx-limb obsolete. Petals of ray-florets connate in yellow, ligulate corollas, with 2-3-toothed lamina; of hermaphrodite florets connate in regular tubular corollas, campanulate, 6-fid limb; corolla-tube of both kinds short, woody embracing the top of the cypsela. Stamens syngenesious; all with entire, truncate base. Style of hermaphrodite florets with arms ending in subulate, hairy tips. Cypsela glabrous, dorsa 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. Surgitja, 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 the outer 1 or 2 foliaceous, the others passing into pales; receptacle small; pales flat, scarios. Calyx-limb 2-3-toothed. Of ray-florets connate in ligulate corollas, with short, broad, toothed, yellow lamina; of hermaphrodite florets connate regular tubular corollas, with 4-toothed limb. Stamens syngenesious; anthers with subentire bases, Style of hermaphrodite.
florrets with arms ending in long, acute tips. Cypsela of ray-florrets dorsally compressed, smooth, with 2 lacerate wings; of Btral florrets few, narrower, compressed or trigonous; often uricate; pappus in both represented by spines at the top of the angles.

SYNEDRELLA NODIFLORA Gaertn.; F. B. I. iii. 308.
C. Bengal; in cultivated ground.
An erect, branching, annual herb.


Annual or perennial, often tall herbs; leaves opposite, entire, or 2-3-pinnatisect. Flower-heads large or medium, long-alked, solitary or loosely corymbose, heterogamous, rayed; ray-florrets 1-seriate, neuter; disk-florrets hermaphrodite, fertile, occasionally homogamous from abortion of ray; involucre subhemispheric; bracts 2-seriate, connate below, membranous, riate, somewhat unequal or the outer smaller, sometimes narrow, subherbaceous; receptacle flat; pales flat or concave. Calyx-linab 2-4-toothed. Petals of ray-florrets 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, hisrute, 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-heA*ids small corymbose, or medium subsolitary, heterogamous, rayed; ray-n* 1-seriate, neuter, or rarely female, fertile; disk-florets hermaphro-
dite, fertile, occasionally homogamous from abortion of ray.
   involucre campanulate or subhemispheric; bracts sub-2-seriate,
   often slightly connate below, outer short, herbaceous, or long an-
   leafy, inner membranous; receptacle flat or convex; pales narrow,
   nearly flat. Calyx-limb 2-4-toothed. Petals of ray-florets con-
nate in ligulate corollas, with a spreading, entire, or somewhat
   toothed lamina; of hermaphrodite florets connate in regu-
   law tubular corollas, with a cylindric, shortly 5-fid limb. Stamens
   syngenesious; anthers with entire or bluntly sagittate base.
   Style of hermaphrodite florets with arms hisrute upwards, With
   short acute, or long subulate appendages. Cypsela dorsally com-
   pressed or somewhat 4-gonous, linear or cuneiform, often nar-
   rowed but not beaked above; pappus of 2-4 persistent, retrorsely
   barbellate awns.

1097. BIDENS PILOSA Linn.; F. k. I. iii. 309. B. Ün††iaia
   F. I. iii. 411.
   Chota Nagpur; N.Bengal.
   An erect herb, with adhering, barbed achenes.

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-heA* small, few, corymbose, heterogamous and rayed; ray-floret*10uwe;
COMPOSITE.

disk-florets hermaphrodite, all fertile, occasionally homogamous
from abortion of ray; involucre small; bracts 2-3-seriate, narrow,
basal connate; receptacle flat; pales scarious, concave or flat.
<^limb 2-toothed. Petals of ray-florets connate in ligulate
hollas, with spreading, entire, or coarsely 2-3-toothed lamina;
<> hermaphrodite florets connate in regular tubular corollas, with
 cylindric, 5-fid limb. Stamens syngenesious; anthers with obtuse
base. Style of hermaphrodite florets with arms ending in long,
airy tips. Cypsela dorsally compressed linear-ovoid or faintly
angled, glabrous, truncate; pappus of 2 slender, retrorsely bar-
bette awns.

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. Flower-heads 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-limb
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, subu-
late tips. Cypsela linear-oblong, dorsally compressed, smooth on
"tho"e of outer florets, or externally tuberculate, the outermost
thick with obtuse margins, the inner flattened and 2-winged;
P^ppys a minute corona.

10^9. 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. Flower-heads
small, peduncled, subterminal and axillary, heterogamous, rayed;
ray-florets few, female, 1-seriate; disk-florets hermaphrodite, all
fertile; involucre hemispheric; bracts few, 1-2-Beriah, obtuse, striate; receptacle conic or elongate; pales serrate. Calyx-limb paleaceous or obsolete. Petals of ray
corollas, with yellow, spreading, toothed lamina; of disk-florets in regular tubular corollas, narrowly campanulate, minutely 5-toothed limb. Stamens
syngenesious; anthers with subentire base. Style of hermaphrodite florets with acute arms, or arms slender with an acute, Cypsela angled, or the outer dorsally compressed; Pappus few scarious, entire awned or fimbriate scales, of the ray o

1100. GALINSOGA PARVIFLORA Cav.; F. B. I. Hi- 311.

C. Bengal, occasionally.

A weak, erect herb, appearing occasionally as weather weed, but not persisting.

484. Tridax Linn.

Perennial herbs; leaves opposite, pinnatisect; narrow. Flower-heads very long-peduncled, medium, gamous, rayed; ray-florets female; disk-florets hennaphro fertile; involucre campanulate; bracts few-seriate, outer broad, herbaceous; receptacle flat or convex; pales mem
Calyx-limb bristly. Petals of ray-florets connate in lig 2-labiate corollas, with a large 3-fid or 3-partite outer, 1-seriate; disk-florets in regular tubular corollas, with elongated limb. Stamens syngenesious; anthers with short, acute auricles. Style of hermaphrodite florets with arms hairy upper tips subulate. Cypsela turbinate or oblong, silky; pappus 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 entire, toothed, lobed or pinnatifid. Flower-heads large, minal, long-peduncled, or smaller and corymbose, rayed, very rarely homogamous from abortion of ray; female, 1-seriate; disk-florets hermaphrodite, all fertile;
COMPOSITE.

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hecyspheric or wide-campanulate; bracts many-seriate, broad, 
dpressed, inner with scarios tips, outer shorter, often with 
sarios and coloured margins; receptacle flat or convex, nake^.
Vallyx-Mmb cupular, auriculate or obsolete. Petals of ray-florets 
conrate in a ligulate corolla, with spreading, entire, or toothed 
ma; of hermaphrodite florets connate in regular tubular 
corollas, with cylindric or 2-winged tube, and more or less cam-
Panulate, 4-5-lobed limb. Stamens syngenous; anthers with 
ogive, entire base. Style of hermaphrodite florets with arms 
truncate and penicillate at their tips. Cypsela subterete or 
agled, variously ribbed or winged; pappus 0 or short, or cupular 
or auriculate.

102. CHRYSANTHEMUM CORONARIUM Linn.; F. B. I. iii. 314; 
N. Bengal.
An annual herb; a cold-weather field crop. Hind.
Gul-chini; Beng. G-ul-dandi.

486. Cotula Linn.

erennial or annual, often creeping, small herbs; leaves alter-
ate, pinnatifid or pinnatisect, rarely entire or toothed. Flower-
as small, peduncled, yellow, heterogamous, rarely homogamous,
isciform; outer florets female, 1-2-seriate; inner florets her-
hrphrodite, all fertile or inner sometimes sterile; involucre 
tspheric or campanulate; bracts sub-2-seriate, herbaceous or 
abraneous, margins often scarios; receptacle naked. Calyx-
ciculate or obsolete. Petals of female florets connate in 
conic corollas or obsolete; of hermaphrodite florets connate in 
ur, with thick, 2-winged, or slender, wingless tube; 
shortly 4-fid. Stamens syngenous; anthers with obtuse, 
truncate; of hermaphrodite florets with truncate or 
tw arms, of sterile florets occasionally entire. Cypsela of ray-
ors or of all florets stipitate, compressed, 2-4-nerved or nerve-
ss, so1Wtimes sheathed above by the base of the corolla, 
sometimes with a short, auriculate pappus.

A chenes ovate, with thick, narrow wings; loaf-segments not mucronate 
anthemoides.

A chenes angled but not winged; leaf-segments mucronate...hemispharica.
1103. **COTULA ANTHKMOIDES** Linn.; F. B. I. iii- 316; E. C. 2025.

Behar, very rare.

1104. **COTULA HEMISPHERICA** Wall.; F. B. I. iii. 316. *Artemis**

Tii-hut; N. C. and E. Bengal; Chittagong.

487. **Centipeda** Lour.

Annual or perennial herbs; *Leaves* alternate, entire or toothed. *Flower-heads* small, sessile on the branches or racemose, disciform, yellow; outer florets female, many-seriate; disk-florets few, hermaphrodite, all fertile; involucre hemispheric; bracts spreading in fruit; receptacle naked. *Calyx-limb* obsolete. *P* of female florets connate in minute, obscurely toothed corollas, hermaphrodite florets connate in regular, short-tubed corollas, with 4-fid, campanulate limb. *Stamens* syngenesious; anthers with obtuse, entire base. *Style* of hermaphrodite florets with short, truncate arms. *Cypsela* 4-angled, with obtuse tip; hairy; pappus 0.


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, woody rootstock and prostrate, somewhat woody branches; *Leaves* alternate, sessile, obovate. *Flower-heads* axillary, shortly peduncled, heterogamous, disciform, yellow; outer riore female, many-seriate; inner fewer, hermaphrodite, all fertile; involucre hemispheric; bracts many-seriate, oblong, obtuse, coraceous, incurved in fruit; receptacle naked. *Calyx-limb* obsolete. *Petals* of female florets connate in elongated, slender, tubular corollas, inflated below; of hermaphrodite florets connate regular tubular corollas, with 4-cleft limb. *Stamens* syngenesious anthers with obtuse, entire bases. *Style* of both female and her-
naphrodite florets with 2-fid arms. *Cypsela* subcylindric, slender, broadly ribbed, hairy only at the base; pappus 0.

1106. *SPHEROMORPHIEA 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. *Flow*er-heads small, solitary or fascicled, racemose or panicled, 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 conuate in very slender corollas, with 2-3-toothed apex; of hermaphrodite florets regular, tubular, with 5-fid *h'mb.* *Stamens* syngenious; anthers with obtuse, entire base. *Style* of hermaphrodite florets with arms truncate, usually penicillate, when florets sterile the arms often conuate. *Cypsela* very minute, ellipsoid, oblong or subobovoid, faintly striate; pappus 0.

Perennial; heads heterogamous; outer florets female, disk-florets hermaphrodite, sterile; leaves flabellately-

1107. *ARTEMISIA PARVFLOL'ARA* 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, involucre 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,
BENGAL PLANTS.

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inmedia spathulate, innermost linear or lanceolate, some connate in a tube, with one long, rigid spine on outer tackle minute. **Calyx-limb** setose. Petals connate in tubular corolla, with 5 slender segments. **Stamens** filaments glabrous; anthers with sagittate base; auriculae tails short, entire or fimbriate. **Style** with thick arms and thick basal ring, at length spreading. **Cypsela** elongate, villous; pappus of many short, free or connate bristles.

1109. **ECHINOPS ECHINATUS** DC.; F. I. iii. 447; F. B. xii. 258.

Chota Nagpur; Behar; W. Bengal.

A branched, spreading, rigid annual, 1-2 feet high.

491. Cnicus Linn.

tirect, simple or branching thistles; **leaves** decurrent on the stem, serrate or pinnately lobed; lobes often spinescent. **Flower-heads** solitary, peduncled or scattered or crowded, homogamous; florets all hermaphrodite, or rarely by abortion 1-sexual, dioecious; involucre hemispheric or globose; bracts many-seriate, adpressed, recurved and spinescent, or with spinescence, 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; tails slender. **Style** with short, rarely niuose arms. **Cypsela** glabrous, obovoid, obtusely 4-angled, 5-10-ribbed, truncate or unibonate at the top, with straight basal areola; pappus-hairs feathery, unequally longer clavellate.

1110. **CNICUS ARVENSIS** Hoffin.; F. B. i. iii. 362; E. V. Carduus lanatus F. I. iii. 408.

In all the provinces.


492. Silybum Gaertn.

An erect, stout, thistle-like herb; **leaves** alternate, with above, sinuately lobed or pinnatifid; lobes and teeth spin in. **Flower-heads** large, terminal, solitary, nodding, homogamous; florets all hermaphrodite, fertile; involucre wide-campanulate; bracts many-seriate, the outer with wide, spinescent, n
A large, glabrous thistle, with white-veined leaves.
**BENGAL PLANTS.**


N. and E. Bengal; Chittagong.

An annual herb, 2-8 feet high, stem as thick as a little finger.

1113. **Sauvurea Candicans** Clarke; F. B. I. iii. 373; E. 904.

S. Chota Nagpur.

An annual herb, 2-5 feet high, stem as thick as a thumb; occasionally small, with scapose, 1- to 2-branched stems.

494. **Goniocaulon** Cass.

An erect, glabrous, branched annual; stem acutely 4-8-angle. *Leaves* narrow, alternate, toothed. *Floret-heads* narrow, and corymbose, homogamous; florets few, all hermaphrodite; involucre oblong, base very narrow; bracts many-seriate, outer gradually shorter; receptacle very narrow, paleaceous. *Calyx* chaffy. *Petals* connate in regular, similar, slender corollas, with long, cylindric, deeply 5-cleft limb. *Stamens* syngenesious; *Style* with filiform arms. *Cypsela* glabrous, oblong, subsolitary, about 20-ribbed; basal areola straight; pappus-scales many-seriate, very unequal.


W. Behar.

An erect, glabrous, branched annual, 1-3 feet high.

495. **Yolutarella** Gass.

Annual herbs, dichotomously branched; *Leaves* alternate. *Floret-heads* subsolitary, purple, violet, or blue, heterogamous; outer florets 1-seriate, neuter; inner hermaphrodite, filiform setose. involucre ovoid or globose; bracts many-seriate, outermost narrow, acute, outer shorter, acute, awned or spinescent; receptacle felt-like, densely bristly. *Corollas* with slender short tube, and cylindrical 5-angled. *Stamens* syngenesious; filaments hirsute or glabrous; *Style* with sagittate base; *Auricles* connate, shortly tailed. *Cypsela* obovoid or oblong, many-seriate, very unequal.
Or almost winged, 5-15-ribbed, often striate and pitted between the ribs; basal areola oblique or lateral; pappus- bristles many-senate, the outer gradually shorter, innermost 2-4, dilated or, flattened.


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 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, dated at its base, in female florets petals obsolete. Stamens syngeous; filaments usually hisrute in the middle; anthers with sagittate base, with connate auricles and short, fimbriate styles. Style with short or long filiform arms. Cypsela glabrous, ovoid, 4-angled or compressed; basal areola oblique or lateral, or on the outer without a pappus, or all or only the inner paleaceous, many-seriate pappus.


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 fimbriolate. Calyx-limb chaffy. Petals connate in narrow, ligulate corollas, lamina truncate, 5-toothed. Stamens synge-
nesious; anthers sagittate at base, with mucronate-acuminate auricles. *Style* with slender, somewhat obtuse arms. glabrous, somewhat 5-angled, or the outer subcompresse many-ribbed or striate; base contracted, tip truncate or W margin slightly produced; pappus of short pales, 2-3-serat.

1117. CICORIUM INTYBUS Linn. var. ENIVU Clarke; iii. 391; E. D. C. 1104.

Cultivated in the western and northern provinces. An erect herb with divaricate branches.


498. Picris Linn.

Erect, branched, hispid herbs; *leaves* alternate or radical, toothed, or pinnatifid. *7tower-heads* terminal, long-p homogamous, yellow, ligulate; involucre subcylindric or panulate; inner bracts 1-seriate, subequal; outer many herbaceous, narrow, or the outermost broad, foliaceous; re flat. *Calyx-limb* hirsute. *Petals* connate in ligulate cor lamina truncate, 5-toothed. *Stamens* syngenesious; anthers “ slender arms. *Cypsela* narrow, incurved, subterete, comp or angled, glabrous, 5–10-ribbed, ribs transversely rugose, short or long; all similar or the outer with a shorter be pappus obsolete; pappus usually copious, of 1-seriate, so 

1118. PICRIS HIERACIOIDES 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 B.J?P *leaves* radical or alternate, cauline often stem-clasping* cahir toothed, or pinnatifid. 2<7ower-heads peduncled, solitary, 

124.7.1.

CajlxAimh hirsute. *Petals* connate in W
COMPOSITE. 627

corolla; lamina truncate, 5-toothed. *Stamens* syngenesious; anthers with sagittate base; auricles acute or shortly setaceous. *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; achene with many subequal ribs. **PrenantJies acaulis** F. I. iii. 403.

ChotaNagpur; C.Bengal; N.Bengal.
A dwarf perennial herb.


In all the provinces.
An annual herb, 6-18 in. high.


ChotaNagpur; C.Bengal; N.Bengal.

500. *Lactuca* Linn.

abrous 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 blue, 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 cylindric, 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.

Slender, radical leaves long, membranous, flaccid; stem-leaves few, achenes red-brown.

Cultivated in the cold weather in gardens. 
A more or less cabbage-like herb. Vernac. Kahu, sa.
The Garden Lettuce.

N. Bengal.
A slender, flaccid annual weed, with subumbella inflorescence.

501. Picridium Desf.
Perennial or annual, glabrous milky herbs; leaves radical, alternate, toothed or pinnatifid; lobes often crisped, toothed spinulose. Flmoer-heaAa long-peduncled, peduncle often yellow, homogamous, ligulate; involucre campanulate; many-seriate, thinly herbaceous, innermost subequal, lanceolate unchanged in fruit, outer shorter, broader, with scarious margm
receptacle flat, naked. Calyx-limb annular, setose. Petals nate in ligulate corollas, with truncate, 5-toothed lamina. syngenesious; anthers with sagittate base; auricles seta
acuminate. Style with slender arms. Cypsel a oblong trunca at both ends, constricted at the tip; ribs 4-5, thick, rugose; pappus-hairs many-seriate, soft, slender; simpl"" connate at the base in a deciduous ring.

1123. PICRIDIUM TINGITANUM Desf.; F. B. I. iii. 413.
Very occasionally in gardens, in the western F
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; segm ents often spinulose-toothed. JWoiw-heads terminal, homogamous, larly subcorymbose, umbeUate or panicled, yellow,
COMPOSITE.


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.


*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; *Santali* 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 cylindric; bracts many-seriate, herbaceous, margins often membranous, inner sub-equal, outer various; keel often thickened in fruit; receptacle
flat naked. *Calyx-limb* setose. Petals connate in *ligulate* corollas, with truncate, 5-toothed lamina. *Stamens* syngenesious; anthers with sagittate base; auricles acute or shortly setaceous. *Afyro-arxns* slender. *Cypsela* narrow, subterete, or angled or slightly flattened, rarely winged, truncate at both ends or rarely emargmate; ribs 4-5, very stout, close-set, smooth, papillose or narrowly winged or 2-grooved, truncate at each end; pappus copious, hairs many-seriate, simple, very slender, white, a few inner sometimes larger and stronger, all connate at the base into a deciduous ring.

Heads terminal, or racemose on the paniculately branched flowering stem.—

Margins of the leaves with few or no teeth; teeth, if present, not cartilaginous at the tips ........................................ aspleniifolia.

Margins of the leaves closely, sharply toothed, the teeth white, firm, and cartilaginous at the tips ........................................ niuUcaulis.

Heads solitary or fueled at the nodes of the flagelliform, rooting, flowering stem .................................................... pimatijida.


In all the provinces.

A perennial weed with a slender, vertical, very long rootstock. Beng. Tik-chana; Santal. Birmalla; Bind. Titlia (Tirhut).


Behar; Chota Nagpur; W. Bengal.

A perennial weed.


Onssa, on the sand-dunes.

A perennial herb.

**Order** LXXII. STYLIDEJE.
Stylidium Sw.

Herbs with slender stems; leaves subrosulate or scattered. Sepals connate in a 5-lobed, often more or less 2-lipped calyx. Petals connate in an irregularly 5-lobed corolla. 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 downwards, or opening in the middle but united at apex and base. Seeds minute; albumen fleshy.

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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.
   A minute herb of wet places.
Order LXXIII. CAMPANULACE^a.

Herbs or undershrubs, sometimes twining, often with milky 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, mose, 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 P-lobes connate in a superior regular or irregular corolla, rotate, or campanulate; lobes as many as calyx-segs. petals connate in a 2-5-celled ovary; ovules many on axial placenta; style cylindrical; stigmatic lobes many as constituent carpels. Fruit a capsule or a berry, times indehiscent and dry. Seeds very many, small, eliptic, albumen fleshy; embryo straight, axial.

Corolla 2-lipped, cleft dorsally to the base; anthers connate.

Fruit an indehiscent berry; stigma lobed. Corolla regular; anthers free or imperfectly connate:—

Capsule only dehiscent within the calyx-teeth:—

Capsule circumscissile, opening by the fall of an apical disk, rarely adnate to corolla-tube; anthers free or connate in the tube, their cells parallel; dehiscence longitudinal, intror rotate; petals connate in a 2-5-celled ovary; ovules many on axial placenta; style cylindrical; stigmatic lobes many as constituent carpels. Fruit a capsule or a berry, times indehiscent and dry. Seeds very many, small, eliptic, albumen fleshy; embryo straight, axial.

Herbs, sometimes tall; leaves alternate, toothed, rarely subentire. Flowers on axillary, 1-flowered, sometimes subracemous, peduncles; bracts leafy; bracteoles small, often 0. Sepals co-v-nate in an adnate, turbinate, or obovoid calyx; limb 5-fid
CAMPANULACRJB. 633

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.

 Leaves pilose on the nerves beneath, petioled.

 Stem faintly 3-cornered; suberect, not rooting; leaves short-petioled, the upper small, bract-like; pedicels very long, slender seeds subspherical.

 Seeds ellipsoid, compressed; stem 3-cornered, often somewhat winged; capsules lanceolate, triangular at base, tapering markedly into the pedicels; pedicels not longer than the subrhomboid leaves

 Stems 5, only the two lower bearded, the three upper naked; corolla tipped, the lobes nearly equal in length; leaves linear or oblong-lanceolate


 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.

 11£+3. LOBELIA TERMINALIS Clarke; F. B!±i. iii, 424.

 N. and E. Bengal,
BENGAL PLANTS.

A small suberect annual, 6-10 in. high, branches, n rooting.

1135. LOBELIA TRIALATA Ham.; F. B. I. iii. 425.
Chota Nagpur.
A small, annual, glabrous herb, branches 6-10 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 mentose, with long, straight branches; leaves opposite nate, short- or long-stalked, entire, crenate or serrate. Peduncled, solitary, lateral or terminal; bracts 0. Sepals in an inferior or superior calyx; limb with 4-6 long, narrow, persistent lobes. Petals connate in an epigynus panulate corolla, white with a short tube, or lurid, large, long tube; lobes 4-6. Stamens 4-6, inserted round corolla-tube. Carpels connate in a 4-6-celled ovary; style thick, many-ovuled; stigma of 4-6 stylar lobes. Fruit an indehiscent, truncate berry. Seeds numerous, elips small.

Chittagong.
An erect perennial, 3-4 feet high, branches horizontal, zonal, and drooping; leaves opposite, lanceolata.

507. Sphenoclea Gaertn.
An annual, erect herb; leaves alternate, lanceolate, en Flowers small, sessile, in lateral and terminal peduncled, cylindric spikes, with a conical apex; bracts distinct; bracts Sepals connate in a half-superior calyx; limb 5-fid; lobes 5. Petals 5, connate in an epigynous, campanulate, 5-lobed corolla. Stamens 5, adnate to corolla-tube, alternate with its lobes; elements short, linear; anthers ovate. Carpels connate in a 2-celled ovary, at first infixed; placentas stalked; ovules very many; style short; stigma obscurely 2-lobed. Fruit a half-inferior capsule, membranous below, the crown above the calyx-limb hairy.
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.

508. Cephaloatigma A. DC.
Small, erect, branched herbs, sparsely patently hairy; leaves alternate, subsessile, margin thickened, entire, waved or crisped. Flowers small, racemed or panicled; 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 cylindric; 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:—

Wahlenbergia

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 panicled
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 cylindric; 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.

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. Floors peduncled or sub sessile, axillary or terminal, panicked, spicate or sub capit at e, purple or white; bracts minute or 0. Sepals con nate in a turbin ate calyx, adnate to the ovary; limb deeply 5-lobed, persistent. Petals 5, con nate in a campanula corolla; lobes shortly lobed. Stamens 5, free; filaments dilated at the base; anthers free. Carpels con nate in an inferior ovary, 3- or rarely 4-5-celled; ovules numerous in each cell; style cylindric; stigma shortly 3-5-lobed. Fruit an obovoid or elongated capsule, de hisc ong 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 LXXIV. YACCINACEJE.
ovary; limb 5-fid, rarely entire, usually persistent. Petals, con-
nate 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; fila-
ments 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 globbose, 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 ?ax testa.

Anthers with spurs on their beaks.......................... variegata.
Anther without spurs on their beaks......................... macrantha.

1144. AGAPETES VARIEGATA D. Don; F. E. I. iii. 446.
    Chittagong.
1145. AGAPETES MACRANTHA Hook. f.; F. B. I. iii. 446. Cerato-
sterna variegatum F. I. ii. 413.
    Chittagong.
Order LXXV. PLUMBAGINEJE.

< Herbs, undershrubs, or shrubs. Leaves rosulate or alternate, petiolar sometimes dilated and stem-clasping below. Flowers hermaphrodite, regular, in terminal scapes or peduncles, capitulate, racemed or panicled; 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 ope. 5-valved. Seed cylindric, pendulous; albumen floury or O. embryo straight.


512. ^gialitis R. Br.

A glabrous shrub; leaves alternate, broad, coriaceous; petiolar dilated at the base, stem-clasping. Flowers in panicked racemes - bract sheathing the pedicel and enclosing the two bracteoles. Sepals connate in a tubular, coriaceous, 5-ribbed calyx. Bhortly 5-toothed. Petals white, connate below, and there agnate to filaments, in a persistent tube, deciduous above the tube.

Stamens 5; anthers oblong. Carpels connate in a linear, exserted capsule;

Seed elongated; albumen 0.

1146. A mi EOTNIDIOUA Eoxb.; F. I. ii. 111; * Bn 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. Stain ens 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. Lea...zeylanica.

Leaves elliptic, tapering to the short petiole; rachis of spike glabrous; corolla red; base of style hairy. 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-
shaped tube; limb 5-, rarely 4-9-cleft; lobes imbricate twisted; corolla very rarely 0. *Stamens* on the corolla, opposite its lobes, or hypogynous where corolla 0, with *staminodes* alternating; filaments usually short; anthers dehiscence longitudinal. *Carpels* connate in a 1-celled ovary; style long or short; stigma entire. A capsule, dehiscing transversely or by valves. & many, usually angular, often sunk in the placenta, 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 ...
Corolla 4.5-lobed, shorter than the calyx; leaves alternate

514. Androsace Linn.

Perennial, rarely annual, low herbs; *leaves* rosulate or on the branches. *Flowers* small, red or white. *Sepals* 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* subsessile, included in the tube, obtuse. *Carpels* connate in a globose ovary; style short. *Fruit* an ovoid or globose, capsule. *Seeds* 2, rarely more, angular or subglobose, transverse.

1149. ANDROSACE SAXIFRAGÆFOLIA Bunge; F. B. I. *

Tirhut; N. and C. Bengal.

An annual herb.

515. Anagallia Tournef.

Slender annual or perennial herbs; *leaves* opposite, quir *Flowers* axillary, solitary, peduncled, red or blue, rarely with bracts 0. *Sepals* connate in a 5-partite calyx. *Petals* in a rotate, 5-partite corolla. *Stamens* 5, adnate to corolla filaments villous. *Carpels* connate in a globose ovary i filiform; ovules many. *Fruit* a globose, circumscissile cai *Seeds* many, peltate, plano-convex.

1150. ANAGALLIS ARVENSI S Linn. ; F. B. I. 606: A. 1034.
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 connate 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 exserted. Carpels connate in a subglobose 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 connate 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 longitudinal, rarely porous. Carpels connate in an oblong, free, or rarely half-inferior, 1-celled ovary, tapering upwards into the style; ovula many, on a free central placentz; style filiform or columnar; stigma simple or rarely shortly lobed. Fruit a small, globose, indehiscent, 1- or, less often, several-seeded berry, rarely \textit{i/Egiceras}) a linear, acute, one-seeded follicle. Seeds usually globose, excavated at the base; albumen pitted or ruminate; embryo transverse.
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 elongating on the tree, exalbuminous

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. 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 Carpels connate in an ovary, adnate below to the calyx; style short, often sulcate; stigma capitate or shortly 3-5-lobed; ovary 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.

1152. M^SA RAMENTACEA A. DC.; F. B. I. iii. 508. Bceobotry*

ramentacea F. I. i. 558.

Chittagong.

An erect tree, 30 feet high.

1153. M^SA INDICA Wall.; F. B. I. iii. 509; E. D. M. 40. Bao-

botrys indica F. I. i. 557. B. nemoralis F. I. i. 59.

Chittagong.

A shrub, a small tree. Beng. Ramjani; Tamomban.
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 subfascicled; 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 cylindric; 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.-----------------------------*robista.*

1154. **EMBELIA EIBES** Burm.; F. I. i. 586; F. B. I. iii. 513; E. D. E. 199.

Chittagong.


Behar; Chota Nagpur; W. Bengal; E. Bengal, Mymensingh.
A large, rambling shrub, or small tree with sprawling branches. *Hind.* Baberâng; *Beng.* Bhai-birrung; *Uriya* Baibidanga.

519. **Ardisia** Sw.

Shrubs or small trees; *leaves* petioled. *Flowers* hermaphrodite, in axillary or terminal, simple or compound 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 cylindrical, often exceeding the corolla-lobes; stigma small, terminal; ovules few. Fruit a globose or subglobose, one-seeded berry. Seed globose; albumen pitted or ruminate; embryo transverse.

Flowers in truly or spurious clusters, divided, their branches more or less flattened; pedicels densely umbellate; 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, rounded.

P. f. colorata var. complanata. Clarke; F. B. I. iii. 519; E. D. 1284.

Chittagong. A large shrub.

Leaves obovate-oblong or elliptic; nerves slender; branches glabrous.
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 stj'le; 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 • panicked; 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
short; albumen 0 and embryo with fleshy cotyledons, or fleshy
and embryo with flat cotyledons; radicle small.

Corolla-lobes and calyx-lobes equal in number:

Lalyx-segments in one series only; parts of the flower in whorls of 5
Sarcosperm.*

Corolla-lobes and calyx-lobes equal in number:

Sideroxylon.

Segments in two distinct series; parts of the flower in whorls

Achras.

Sarco*

Stamens as many as petals; staminodes as many as stamens alternat-
ing with them; seeds not albuminous:

Sarco*

Stamens as many as petals; staminodes as many as stamens alternat-
ing with them; seeds not albuminous:

Dichopsis-

Staminodes none; stamens about 2-3 times as many as corolla-lobes.

Bua.*

821. Sarcosperma Hook. f.

HPXeasS 00S1 JPP08ite - blong, acuminate, coriaceous, tow
small, fascicled on the branches of
simple or compound panicles; bracteoles minute. Sepals 5, 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 cylindric. Fruit a large, ellipsoid berry, 2-celled or 1-celled. Seeds 2 or solitary; testa crustaceous; hilum nearly basal; albumen 0; embryo fleshy.

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 cylindric, 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, a m
contorted. Stamens 6, adnate near base of corolla, opposi
lobes; filaments slender, reflexed above; anthers lancea
staminodes 6, petaloid, alternate with and nearly as long
notches. Carpels connate in a villous, 10-12-celled. o
style cylindric or thickened in the middle, glabrous; stigma
Frut 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 o
edible fruit. Vernac, Sapota (from the Amen
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; P
several. Sepals 6, connate on free and biseriate above
three outer lobes valvate, enclosing the 3 imbricate inner
6, more or less connate, imbricate or almost contorted. 12, attached near base of corolla, or alternately opposite
lobes and near the base and alternate with the lobes and nig.
up, occasionally from 13-18; filaments short or long; lanceolate, connective produced, acute or 2-fid, stamino
carpels connate in a villous, usually 6-celled ovary; style u
Fruit a fleshy, ellipsoid, or ovoid berry. Seeds 2 or sohtaij »
testa crustaceous; albumen 0; cotyledons large, fleshy.

1165. DICHOST POLYANTHA Hook, f.; F. B. I. iii. 542; -k-
D. 392.
Chittagong.
A tree, 30-40 feet high, said to yield a good gutta-peW
Beng. Tali.

525. Bassia Linn.
Deciduous trees; leaves petioled, coriaceous, silky or tome" beneath when young, clustered at ends of branches; stip" caducous. Flowed on axillary pedicels, among the clustere
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.

W. Bengal; Behar; Chota Nagpur; Orissa.

526. Mimusops Linn.

Trees; leaves elliptic or obovate, coriaceous; primary nerves many, subparallel, spreading from the midrib, slender or obscure. Flowers 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; staminodes as many as the stamens, entire or serrate or lobed. Carpels connate in a hirsute, 6-8-celled ovary; style cylindric. 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. Ebenaceae.
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 * and * flowers 1-seriate and as many as corolla-lobes, or 2-more-seriate and 2-several times as many; filaments shorter 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-furrowed; testa thin; albumen copious, uniform or ruminated; embryo axial; radicle superior.

Flowers 3-merous; ovary 3- or 6-celled. Flowers 4-5-merous; ovary 4-5- or 8-10-celled.

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 cupuliform and enlarged 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. Carpels 3-6; style arms 3. Fruit dry or fl. Seeds globose, 1-6-seeded, e*ta*bumen.

Orissa, in dry hills.
A small tree. Uritya 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, hypocretiform, or campanulate corolla; lobes contorted to right in bud. Stamens 4-64, often 16; filaments distinct, paired, or polyadephous; anthers linear, rarely short. Ovary rudimentary.

*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:—

Cylyx 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-£m. 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
BENGAL PLANTS.

Didopyros.

, glabrous without; stamens glabrous; ovary 4-celled; small, -3 in. across; leaves hairy beneath. Chloroxy o

Male flowers in cymes, shortly pedicelled; corolla rather nub

ovary 8-celled:

Corolla quite glabrous externally; stamens glabrous; distinctly pedicelled:—

Leaves glabrous beneath, glaucescent; fruit "5- across; an armed tree

Leaves pubescent beneath; fruit 1-15 in. across; an. armed tree.

Corolla-tube glabrate; lobes pubescent externally; pilose; fruit sessile, 2-3 in. across; edible; leaves reticulated beneath.

{Ovary hairy; fruit glabrescent; stamens 13-22, glabrous, sparsely pilose; mature leaves glabrous beneath or nearly s

[p. 651]

Male flowers in small fascicles, sessile; calyx-lobes de

stamens 13-20, quite glabrous; ovary 2-6-celled; fn"g

{feather} -7 in. across; leaves quite glabrous beneath...ova y ded

Male flowers in cymes, shortly pedicelled; calyx-lobes round

stamens 13-22, glabrous or sparsely pilose; ovary 6-8-ce

fruit -5 in. across; leaves almost glabrous.

Corolla tomentose or densely woolly both on lobes and tube e

{nally}:[p.651]

Male flowers in small fascicles, sessile; calyx 4-lobed,

ovate-apiculate; corolla salver-shaped, tomentose; 16, glabrous; fruit ellipsoid, glabrous, narrowed at the

1-25 in. long, 75-1 in. wide; leaves sparsely pilose beneath.

Mule flowers in cymes:—

Calyx in male flowers funnel-shaped, 4-5-lobed; lobes in female dissimilar, 4-5-angled; corolla urceolate, den

rusty-woolly; stamens 16; filaments glabrous, but fulvous-pilose on the back; styles 2-3, bifid; leaves ovate, dull, young hairy, mature glabrous above, fruit globose, smooth, 1 in. across.

Calyx deeply 4-lobed; corolla tubular, densely villous; 22-24, quite glabrous; styles 4; leaves large, oblong, shining, glabrous above, silvery-silky beneath; fruit ellip

hairy, 2-5 in. long, 2 in. wide.

Female flowers in many-flowered cymes, much longer than cymes; calyxx 5-loba nearly half-way down; corolla tubular, v

externally; stamens 16, glabrous; ovary hairy, 8-12-celled; sti
4-6; fruit globular, glabrous, 2-3 in. across; leaves broad-oblong, pubescent, large, glabrous [p. 651]. .............................................. ramiflora.

1169. DIOSPYROS TOPOSIA Ham.; F. B. I. iii. 556; E. D. D. 664.
    D. racenwasa F. I. ii. 536.
    Chittagong.
    A large or medium tree; leaves oblong, acuminate, coriaceous, alternate. Vernac. Gûlul.

    In all the provinces.
    A dense tree; leaves oblong, obtuse, or subacute, rounded or truncate at the base, coriaceous, alternate. Hind, and Beng. Gab, makurkendi, têndû; Uriya Gus-
    vakendhu; Santal. Makarkenda.

    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. TehcM, dasaunda, lohari; Beng. Bang-
    gâb; 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 the ends, coriaceous.

**Diospyros sylvestris** Uoxb.; P. I. ii. 537; » B« [ < Ui. 55 ]

**B.** 1. D. 656.

O. rissa; Chota N'agpur.

A medium size; leaves elliptic or oblong* narrow** both ends, herbaceous or chartaceous us.

**Diospyros stricturna** Rxb.; P. I. ii. 539; F. B. Liutj

E. D. D. G 58.

Tippcrs.

A tall, slender, conical tree; leaves elliptic-1

acuminate, coriaceous.

**Worou Tou** (x b.; F. I. ii. 689; P. B. -)

E. I. D. 656.

**Behar; OhoUNagpar; Y. BengaL**

A small gnarled tree; leaves usual h

ovate-acute, alternate and

**H** Tmnaal niitha tend.; Be** ; K. yun

ndhu; Kof. Tiril.

D. 567.

**ittthred In 0. BengaL**

A tree; leaves oblong-acute, c<riacea'is.

**Jawunuk** Uoxb.; P, L1L586; P. B. -

E. I, ii. M 8.

Tippeca.

A largo, broadly oblong.

ceous. I rigab, gual.

Order LXXX. STYRACEJE.

Trees or shrubs. Ti

Kxillary or terminal, simple or panicle-1

is solitary; bracts small.

or inferior campakula^ calyx ; limb 5-4-toothed or tf

talent. P i UUt B or 4, free or connate in a tube,

Sepsals connate in a superior or inferior campanula, calyx; limb 5-4-toothed or tf
talent. P i UUt B or 4, free or connate in a tube, or 8 or 10 or nui

01-

oor connate; anthers globoe or linear; deli

connate in a 2-5-celled, inferior or H

occasionally, by early separation of the so
1-celled; ovules 1 or few on tin- inner angle of each eell, pedunculate; stigma small or capit; indchioccent, drupaceous. 1-seeded, or occasionally 2-8-seeded, *Serth* with this test*; albumen fleshy or sometimes hairy; embryo straight or curved.

Sumeni m*nr. in several rows; Symplocos.
Sumcns ten, in a single ro«. Sty... rax,

529. Symplocot Linn.

*Trees or Rhrubs; UavuM alternate, too*ched 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 pod, calyx 5-10-celled; bracteoles 8-1, small, at base of flow*.

Seplum connate in a distinct tube. Calyx, 4 small, imbricate lobes; tube adnate to ovary. 

Stamin$& many. Heo... ber through its length, Homettmee connate I a; anthers short in an inferior, 8-celled, rarely 2-1, ovary; stylo filiform; stigma small, capita to, usually connate, rat- in a distinct tube. Stamen* in many.

Fowers in racemes; stamens sometimes 100 or more ..........raesmosa.
Flowers in small cymes, subterminal on the branches; stamens about 40

530. Styrrax Linn.

or BHR trees; leaves elliptic, lanceolate. Flo**rt** in lax, vidod axillary •. Flora of the Indian Archipelago, 2nd edition, 1889-1896.
BENGAL PLANTS.

axillary; bracts inconspicuous. Sepals connate in a truncate, or 5-toothed calyx, free or slightly connate to the ovary. Petals 5, connate in a short tubular corolla; lobes oblong, imbricate. Stamens 10, 1-seriate, connate to the corolla-tube; filaments short; anthers large, linear. Fruit a globose or ellipsoid, tough capsule, seated on shaped calyx, breaking up irregularly. Seeds by abortion rarely 2, erect; testa papery or hard; albumen fleshy, embryo straight, with broad cotyledons.

N. Bengal, Duars.

Order LXXXI. OLEACEæ.

Trees or shrubs, unarmed, erect or climbing. Leaves opposite or entire, very rarely alternate, simple, 3-foliolate or pinnate, toothed; stipules 0. Flowers hermaphrodite, often sometimes polygamous or dioecious, regular, usually 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 orments 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; testa bony; albumen fleshy, horny or 0; embryo straight inferior or superior.

*Cprolla-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]..........................
Fruit 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

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 sub-connate. Fruit a didyinous berry, or from suppression of one carpel 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 triangular*.

Roxburghutmun.
*Climbing, rarely suberect shrubs; leaves shortly petioled; petals third of an inch long or shorter; ripe carpels usually two:—[P.7]

Leaves all simple:

Branchlets pubescent, hairy or villous; calyx pubescent:

Cymes many-flowered, dense:

Bracts prominent, white, ovate-lanceolate; calyx-teeth linear; leaves nearly glabrous, elliptic-acute; l'ipshoid; sometimes not climbing

Bracts not prominent, the two leaves close under the inflorescence green; always climbing:

Bracts linear; calyx-teeth short, linear; leaves only hairy on nerves beneath, ovate-lanceolate;

Bracts if present ovate-lanceolate, often absent; calyx long, subulate; leaves hairy, ovate-acute; pyriform; leaves nearly glabrous; ripe carpels globose; always climbing

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 climbing

Leaves ovate; corolla-lobes oblong

Leaves narrowly elliptic; corolla-lobes lanceolate

Branchlets glabrous; calyx glabrous; cymes few-flowered; calyx-teeth long, linear; leaves quite glabrous, oblong or elliptic, acuminate, 3-nerved; always climbing

Leaves, at least some, with a pair of minute lateral leaflets pubescent; calyx pubescent; teeth very minute, oblong simple, or terminal leaflets if compound, pubescent, ovate-acute; cymes many-flowered, lax; always climbing

1182. JASMINUM ARBORESCENS Roxb.; F. I. i. 95; F. V. E. D. J. 13.

Tirhut; Behar; Chota Nagpur.

A large shrub or scrubby tree. Hind. SaptatoS mallika, muta-bela; Beng. Bura-kunda; Sant hund baha.

118B. JASMINUM ROXBURGHIANUM Wall.; F. B. I. iii-1 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.
Nyctanthes Linn.

A small tree; leaves opposite, ovate. Flowers in small sessile, Jbractoate 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\^c; tube cylindric, yellow; lobes 4-8, spreading, white, in bud imbricate. Stamens 2, subsessile near the apex of the corollatube. 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; cotyled\^v\^a i\^f\^c; radicle inferior.
533. Schrebera Roxb.

A tree; leaves opposite, odd-pinnate. Flowers in 2-3-chedomous, compound cymes; bracts small, in a tubular-campanulate, irregularly 4-7-ched cymes; bracts small, spreading, connate in a salver-shaped corolla; tube cylindric, spreading, in bud imbricate. Stamens % adnate near corolla-buce; filaments short. Carpels 2, connate in the ovoid ovary; ovules 3-A, pendulous from apex of each cell; spicid; stigma shortly 2-ched. Fruit an ovoid, 2-chelidically 2-valved, woody capsule. Seeds pendulous; testa albumen 0; cotyledons plano-convex or contorted; radicle superior.


Chota Nagpur; W. Bengal; Orissa.

A tree, 40-50 feet high. Hind, Moka; ban-palas; Bcng. Ohanta parul; Janta; Kol. Jarjo, sandapsing; Oraon Ghato.

534. Linociera Swartz.

Shrubs or trees; leaves opposite, entire. Flowers in axillary, rarely terminal panicles or cymes, often in small terminal fascicles; bracts small. Sepals connate in a small* petals 4, long or short, nearly free, or connate in pairs, valuate in bud. Stamens 2; filaments short; anthers Carpels 2, connate in a 2-chelid ovary; style short, obsolete or entire; ovules 2, pendulous in each cell. Fruit an ovoid, rarely globose drupe; endocarp bony or crustaceous. See species Q, solitary, pendulous; testa thin; albumen (in our sp. radicle superior.

All parts glabrous; leaves papery, reticulations prominent; panicles pubescent; leaves leathery, obscure; ovary densely pilose; intermedia vat. Rumphia.

Chota Nagpur; Orissa.
A small tree, 25 feet high.

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.


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. Sepals 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 tip; style 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.


E. Bengal; Chittagong.
A tree, 60 feet high. Vernac. Bhui-mura.
537. Myxopyrum Bl.

Large scandent shrubs; branches 4-angled; leaves \(\times\), large, coriaceous, 3-nerved, entire or toothed. Flowers yellowish, in many-flowered, axillary and terminal trichojj Panicles; bracts minute or 0. Sepals connate in an 4-lobed calyx. Petals 4, connate in a corolla, with tube than calyx; lobes concave, oblong or spatulate, inde valvate in bud. Stamens % adnate to corolla-tube; fil than calyx; lobes concave, oblong or spatulate, in bud. Stamens % adnate to corolla-tube; filaments short; stamens ovate. Carpels 2, connate in a 2-celled ovary; ovules 1-2 in each cell, attached near base of inner very short; stigma 2-lobed. Fruit a subglobose i-» 2- obovoid 2-seeded berry, with crustaceous pericarp. Seed; 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, stipules rudimentary, setiform. Flowers small, dioecious gamo-dimorphic, clustered or panicked. Sepals connate in a campanulate or ovoid calyx; limb 3-5-toothed or -lobed. L- 4, free or connate in a shortly campanulate tube; imbricate bud. Stamens 4, on the corolla-tube or, when petals free, alternate with the petals; filaments free or connate in tube; anthers ovate, dorsifixed; connective apiculate dehiscence longitudinal, lateral. Carpels connate in a few-celled, or imperfectly 4-celled ovary; ovules 1-2 in basal, erect, anatropous; style short; stigma 2-fid or « Fruit a berry or drupe, usually 1-seeded. Seed erect, albumen 0; testa thin or cartilaginous; cotyledons thick, at the base.

Rect, unarmed trees or shrubs « corolla gamopetalous; corolla tube, ovary 1-celled, 1-ovuled or 1-celled; cells 3-1-ovuled
538. Salyadora Linn.

Shrubs or trees; leaves opposite, entire. Flowers small, hermaphrodite, or functionally 1-sexual, in panicked 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 subsessile, large, 2-fid. Fruit a globose, 2- or 1-seeded berry; endocarp membranous. Seed globose; albumen 0.

1199. AZIMA TETRACANTHA Lamk; F. B. I. iii. 620; E. D. A. 1165.

Orissa; Sundribuns.
A glabrous, rigid, rambling shrub. Hind, Kantagurkainai; Beng. Trikanta-gati.

INdIAN BOTANy GARDEN;