

A CONTRIBUTION TO THE FLORA OF MIRZAPUR—II

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ABSTRACT

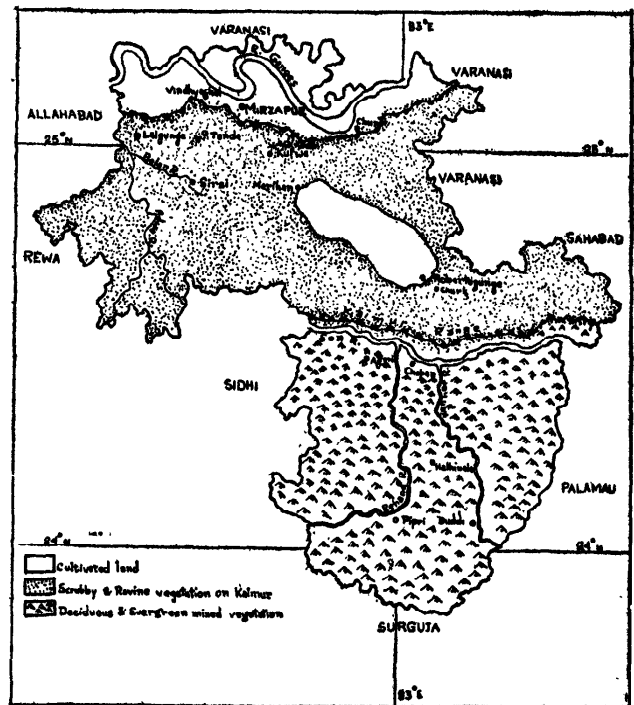
The paper gives an account of collection of plant specimens from the Mirzapur district in south-eastern Uttar Pradesh. The collection from the Vindhyan plateau as well as from the plains and southern hilly areas of the district yielded about 800 collection Nos. of which 460 species are incorporated in this list; including more than 40 species of grasses and a few interesting Pteridophytes. The paper, in addition, gives an account of the general vegetational pattern of the district in relation to topography. Some of the common and interesting plants, showing characteristic concentrations in different areas of the district, have also been pointed out. A general account of cultivation, common road-side plants, parasitic members and aquatic vegetation is given in brief. *Crotalaria quinquefolia* Linn. and *Hibiscus beddomei* Rakshit et Kundu and *Habenaria graveolens* Duthie are given here as new records for the Upper Gangetic Plain and *Aristolochia indica* Linn., *Passiflora foetida* Linn. and *Acanthospermum hispidum* DC. are reported as new for the district.

INTRODUCTION

The importance of the floristic composition of the Mirzapur district has already been emphasised in a previous communication (Bhattacharyya, 1963) and it has been stated therein that excepting a short note including some new records for the Upper Gangetic Plain (Srivastava, 1955) there is no other published account of the flora of the district. The present report on the flora of Mirzapur gives a general idea of the vegetation in relation to topography of the district including cultivation. Concise accounts regarding the concentration of individual species in different parts of the district and also the aquatic and parasitic members have been described in brief. Mirzapur is one of the largest districts of Uttar Pradesh with extensive forests and vast river valleys and the present account is intended to convey a general idea of the important floristic elements and their distribution in the district.

On behalf of the Botanical Survey of India exploration work within the district was initiated by Dr. M. A. Rau, the Regional Botanist of the Northern Circle in August, 1958. Later on a detailed investigation was carried out by the present author as a Botanist of the same Circle in 1961. The present account is based on four visits to the district, once during the monsoon season of 1958 and the other three during the post monsoon and winter months of 1961. A map indicating the places visited in the district and illustrating the types of vegetation met with and four photographs showing some typical vegetations are also included in the paper.

Eighty families included in this list have been arranged according to Bentham & Hooker's system and for the sake of easy reference generic names under individual families have been placed in alphabetical order. Total number of collections recorded here consists of about 460 species of which the Leguminosae are represented by the largest number.



A rough sketch map of Mirzapur District (U. P.) showing broad vegetational patterns in relation to topography. Places visited during collection tours are also mentioned.

The vegetational patterns of the district which have been described in this paper are drawn by visiting selected areas all over the district. Good collections have been obtained during the months of September and February representing the post monsoon and winter floras.

In an earlier note on the flora of Mirzapur (Bhattacharyya l.c.) some new records for the district and for the upper Gangetic plain were described and while preparing the present list of plants, few more species have been met with which appear to be new for the district. These are marked with an asterisk. The plants recorded in the present list are all deposited in the Herbarium of the

Botanical Survey of India, Northern Circle, Dehra Dun.

CLIMATE AND GENERAL TOPOGRAPHY OF THE DISTRICT

The district has an average rainfall of 1140-1270 mm and the temperature ranges from 10°-34°C.

Leaving a small sector beyond the 25°N latitude of the Gangetic plain most parts of the district are hilly. The greater portion of this rocky area is represented by the flat Upper Vindhyan plateau and is delimited by the Kaimur range in the south which runs almost parallel to the Son Valley. The entire area in this sector is represented by uniform sandstone rocks in horizontal stratification (Wadia, 1957) having an altitude of 150-650 m and the maximum altitude of the Kaimur range near the Son Valley is about 650 m. There is very little physical distortion of the plateau and as such upheaval of rocks is seen only in some restricted areas as near Kotwa, Sirsi, Robertsgunge and the Kaimur near the Son Valley; otherwise the vast stony wastes full of scrubby vegetation are the indicators of horizontal sandstone rocks. Limestone hills are visible near Churk, which however, cover a very small area in comparison to the sandstone rocks. The plateau has given rise to deep ravines in many places along the course of flowing streams and due to vertical faults water falls are frequently met with as near Tanda, Sirsi, Bindam, etc. A small sector within the centre of the plateau forms a slightly shallow basin. This zone starts from Marihan and terminates at Robertsgunge.

Beyond the Son Valley in the south i.e., after Chopan there is a remarkable change of the topography. This is represented by parallel ranges of hills (100-400 m) running east to west and the western portion of the Rihand river is characterised by complicated hilly areas and has hills of considerable heights (250-600 m). These hills have been subjected to great physical distortion and represent a much older rock type and instead of pure sandstone other rock types are visible therein. Vertical disposition of strata and folding and bending of the latter and numerous faults characterise the hills in the southern tracts.

Two big rivers namely the Ganga and the river Son flow in the northern and southern parts of the district respectively of which the Ganga approximately makes the northern boundary of the district and the Son passes little beyond the centre. The Son itself and two of its important tributaries viz., Rihand and Kanhar have greatly influenced the vegetation in the southern part of the district. In addition to rivers, hilly areas in the district have helped in constructing a large number of vast water reservoirs which as a result have inundated considerable amount of natural vegetation. However, the submerged lands in most cases had a stony

waste consisting of scrubby vegetation. Quite a number of streams are also present on the Vindhyan plateau.

VEGETATION IN RELATION TO TOPOGRAPHY

It has been pointed out earlier that according to topographical features, the district may be divided into three broad sectors and excepting the thin strip of the northern Gangetic plain the rest of the plateau and the older rocks in the south are covered with natural scrubby jungle and thick forests. The whole of the Upper Vindhyan represents a uniform horizontal stratification of rocks. Top of this rock is unsuitable for broad leaved plants and is represented by a uniform scrubby dry vegetation. The main components of this scrub are *Zizyphus nummularia*, *Z. mauritiana*, *Z. xylopyra*, *Z. oenophia*, dwarf *Butea monosperma*, *Acacia catechu*, *A. nilotica*, *A. leucophlaca*, *A. tortia*, *A. senegal*, *Mimosa hamata*, *M. rubicaulis*, etc., which on the other hand have large number of associates consisting of climbing herbs and shrubs like *Cocculus hirsutus*, *Teramnus labialis*, *Atylosia scarabaeoides*, *Merremia tridentata*, *Ipomaea pes-tigridis*, *I. obscura*, *I. nil*, *Pergularia daemia*, *P. pallida*, *Hemidesmus indicus*, *Gymnema sylvestre*, *Ichnocarpus frutescens*, *Ventilago calyculata*, *Combretum roxburghii*, etc. However, on the slopes of this plateau are found a large number of comparatively broad leaved species in addition to the plants mentioned above. Some of these members are *Lagerstroemia parviflora*, *Wrightia tinctoria*, *Butea monosperma*, *Premna mucronata*, *Madhuca indica*, *Holoptelea integrifolia*, *Anogeissus pendula*, *Cordia monica*, etc. Some of the characteristic shrubby members on the slopes consist of *Carissa opaca*, *Flacourtia indica*, *Adhatoda vasica*, *Nyctanthes arbor-tristis*, *Holarrhena antidysenterica*, *Helicteris isora*, *Woodfordia fruticosa*, *Dendrocalamus strictus* and others. The herbaceous elements on the slopes are considerably changed according to seasonal variations and have been mentioned in the list. However, *Pulicaria angustifolia* a perennial herb with yellow heads could be seen throughout the year.

While describing the vegetation of the Vindhyan sandstone special mention should be made about the thick mixed forest of dry deciduous and evergreen trees within the ravines. In comparison to the barren look of the plateau, the ravines are always a shelter for some evergreen trees though deciduous members are dominating. On the other hand, dry scrubby vegetation within the ravines is insignificant in comparison to other broad leaved trees. The typical tree communities within the ravines are represented by *Terminalia arjuna*, *T. tomentosa*, *Ficus retusa*, *F. tomentosa*, *F. glomerata*, *Mitragyna parvifolia*, *Hymenodictyon excelsum*, *Sterculia urens*, *Lannea coromandelica*, *Adina cordifolia*, *Wrightia tinctoria*, *Syzygium heyneanum*,

Anogeissus pendula and others. The shrubs and climbing shrubs associated with the trees are *Zizyphus oenophia*, *Millettia auriculata*, *Mimosa rubicaulis*, *Acacia torta*, *Ventilago calyculata*, *Nyctanthes arbor-tristis*, *Gardenia latifolia*, *Erycibe paniculata*, etc. *Dendrocalamus strictus* is also a very common member of the ravine flora and this in association with *Euphorbia nivulia* forms a typical association on the sun facing side of the ravine.

The central portion of the plateau starting from Marihan and ending at Robertsgunge and the gangetic plain in the south are under cultivation and details of it are given elsewhere. These plains near the approach of hills are always characterised by a flourishing growth of *Madhuca indica*.

A remarkable contrast to the scrubby vegetation of the Kaimur sandstone is visible in the southern tracts of the district which show dense forest vegetation of monsoon type consisting of mixed deciduous and evergreen trees. Broad leaved trees of considerable height are met in this region. The common trees in the forests are *Bridelia squamosa*, *Diospyros melanoxylon*, *Shorea robusta*, *Anogeissus latifolia*, *Terminalia arjuna*, *T. tomentosa*, *Buchanania latifolia*, *Madhuca indica*, *Dalbergia latifolia*, *Pterocarpus marsupium*, *Hardwickia binata*, *Chloroxylon swietenia* and others. It has been stated earlier that hills beyond the Son Valley have formed more or less parallel ranges running east to west and as such North-South factor is found to play an important role in the distribution of tree species. The species mentioned before have more concentration on the northern slopes whereas the southern faces are covered with a uniform growth of *Boswellia serrata*. Associated with the above-mentioned trees are a large number of less important ones, e.g., *Emblica officinalis*, *Sterculia urens*, *Adina cordifolia*, *Lagerstroemia parviflora*, *Casearia tomentosa*, *Syzygium cumini*, *Acacia nilotica*, *Zizyphus xylopyrus*, *Aegle marmelos*, *Bombax ceiba*, *Kydia calycina*, *Grewia tiliaefolia*, *Bauhinia malabarica*, *B. variegata*, etc. Occasionally along with these, species of *Stereospermum chelonoides*, *S. suaveolens*, *Schleichera oleosa*, *Lannea coromandelica*, *Hymenodictyon obovatum* have been seen. The forest undergrowth supports a large number of shrub and climbing shrubs. *Moghania chappera* is particularly common under *Shorea robusta*. *Mimosa rubicaulis*, *Acacia torta*, *Zizyphus oenophia*, *Butea superba*, *Bauhinia vahlii* are some of the common climbing shrubs within the forest near Hathinala. Other commonly represented shrubby members are *Woodfordia fruticosa*, *Randia spinosa*, *R. uliginosa*, *Grewia polygama*, *Semecarpus anacardium*, *Nyctanthes arbor-tristis*, *Leea macrophylla*, *Phoenix sylvestris*, *Uraria picta*, etc. More towards south of Hathinala and near Pipri, *Acacia nilotica* is a predominating member. *Dendrocalamus* is abundant near Pipri. But largest number of trees in the

whole southern tract is represented by *Boswellia serrata*.

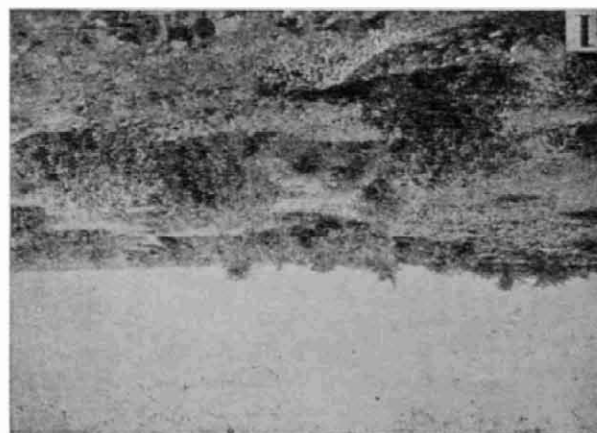
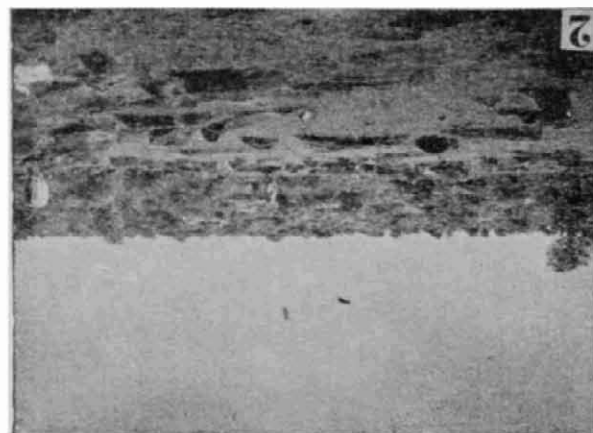
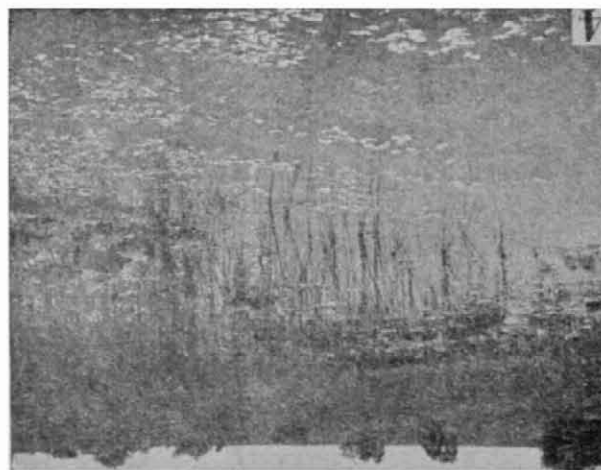
Amongst the herbaceous undergrowth in the forest special mention should be made about *Buettneria herbacea*, *Dentillaria corymbosa*, *Uraria neglecta*, *Crotalaria albida*, *Sida veronicaefolia*, *Euphorbia cristata*, *Laggera flava* and others. These were seen during the month of December. Grasses in the forest undergrowth have been found to be very rich during the winter and post monsoon seasons and some of the commonest grasses are represented by *Bothriochloa intermedia*, *Pennisetum pedicellatum*, *Themeda quadrivalvis*, *Heteropogon contortus*, *Chloris barbata*, *Dichanthium annulatum*, *Imperata cylindrica*, *Chrysopogon lancearius*, *C. fulvus*, *Rottboellia exaltata*, *Apluda mutica*, *Brachiaria ramosa*, *Schoenefeldia gracilis* and others.

CONCENTRATION OF SOME COMMON PLANTS

When the vegetation of the district is examined at a glance one can hardly overlook the natural concentration of different species within the Vindhyan plateau and in other places of the district. A major part of the large tree vegetation of the district is represented by *Madhuca indica* and they are characteristically abundant on the plains approaching the sandstone hills. This is marked on way to Kutwa, Chunar, Tanda and while getting down into the Son Valley from the Kaimur range. In between 42-48 km from Mirzapur town, on way to Rihand Dam there is a thick belt of this species running east to west. *Zizyphus* is the largest genus within the Vindhyan scrubby jungle, of which *Z. nummularia* is markedly dominant near Chunar whereas *Z. oenophia* dominates near Vindhychal. *Z. mauritiana* does not show any typical concentration but is more on the central plateau. *Z. xylopyra* occurs in thickest concentration near Sirsi, beyond the upper Khajuri Dam. Apart from *Zizyphus*, *Butea monosperma* is another conspicuous plant on the plateau and is markedly luxuriant and concentrated within the troughs. This is evident near Sirsi and Bindam Falls. *Olax scandens* has been found to grow abundantly only near Bindam. *Ficus retusa* and *F. tomentosa* are always concentrated within the ravines and another conspicuous member in that region is *Terminalia arjuna*.

This is marked near Tanda, Bindam, Sirsi, Kotwa and in other places. The evergreen climbing shrub *Erycibe paniculata* always takes its position just by the side of the falls and can be seen growing on the sides of Tanda, Bindam and Sirsi falls. The hill slopes near Tanda show a remarkable high concentration of *Lagerstroemia parviflora*. *Nyctanthes arbor-tristis*, *Flacourtia indica* and *Lantana camara* show their thickest growth on the hill slopes at Chunar. Beyond the upper Khajuri Dam there is a marked preponderance of

PLATE I
1. *Lagerstemia parviflora* and *Zizyphus* Spp. in association on Vindhyan hill slopes near Tanda Falls. 2. Stony waste with typical scrubby vegetation on Vindhyan plateau, consisting of species of *Zizyphus*. 3. Dense mixed forest in the southern tracts showing typical trees like *Bridelia*, *Terminalia*, *Sterculia*, *Boswellia*, *Anogeissus*, etc. 4. *Typha* and *Peltandra* association within Tanda swampy area.



Holarrhena antidysenterica associated with *Zizyphus xylopyra*. *Alangium salvifolium*, an interesting member of Cornaceae is found to grow in fair abundance near Barkachha and elsewhere this plant is very rare. A notable concentration of *Phoenix sylvestris* is visible along the roadsides near Robertsgunge. *Syzygium heyneanum* and *Anogeissus pendula* are noted in large numbers within the Sirsi ravine. *Dendrocalamus strictus* is abundant in the scrubby jungle near Churk, Pipri and Vindhyachal. It is also a dominant member in the southern face of the Tanda ravine and at the latter mentioned place *Euphorbia nivulia* is growing profusely forming an association with *Dendrocalamus*. Beyond the Son Valley, in the southern portion of Mirzapur, *Boswellia serrata* is the commonest tree which is always distributed on the southern hill slopes. *Bridelia squamosa*, *Shorea robusta* and *Anogeissus latifolia* are the three species giving a thick appearance of the forest vegetation around Hathinala and the same type of concentration also extends towards Duddi. *Hardwickia binata* is restricted only around Hathinala and a few miles towards the south of latter. *Emblica officinalis* is also seen to dominate as a common associate in the forests around Hathinala. *Acacia nilotica* is a largely represented member in the southern extremity of the district near Pipri and it has also been seen in abundance near Robertsgunge and on the flat banks of the river Ganga. The herbaceous member needing special mention is *Ranunculus sceleratus*. It has been found in a very thick concentration on the steep bank of the Ganga. In late winter the entire bank appeared to be under cultivation.

CULTIVATION IN MIRZAPUR

In comparison to the total land area possessed by the district a small section of this has been utilized for growing food and other agricultural crops. It has been stated earlier that the area under cultivation may be broadly divided into two sectors. The Gangetic plain in the north and a central pocket in the plateau are the two regions used for cultivation.

The nature of crops cultivated in the northern Gangetic alluvium differs to a large extent from the agricultural products of the Vindhyan plateau. The northern block is a wheat, pulses, rice and oilseeds growing area where as the reddish clay soil on the plateau is mainly under cultivation of rice and oil seeds. Agricultural crops in the Gangetic plain consist of *Triticum aestivum*, *Cajanus cajan*, *Pennisetum typhoides*, *Cicer arietinum*, *Pisum sativum*, *Linum usitatissimum*, *Carthamus tinctorius*, *Oryza sativa*, *Saccharum officinarum*, etc. It is a general practice to grow *Triticum*, *Cicer* and *Carthamus* simultaneously in the same field. The famous carpet of Mirzapur is mainly prepared from

the fibres of *Crotalaria juncea* and in most fields this is grown along with *Cajanus cajan* or in the bordering land of the latter mentioned pulse. Amongst pulses *Cajanus* takes the top priority and these plots are rotated with wheat. Amongst oilseeds *Linum* is more favoured in comparison to other oilseeds like *Brassica* and *Carthamus*. Sugarcane is cultivated towards the eastern part of the northern block and occasionally on the central plateau but it is negligible in comparison to other agricultural crops.

On the other hand the central block of the plateau i.e., from Marihan to Robertsgunge is a rice growing area with a few scattered fields of *Linum* and *Triticum*. In the southern part of the Son Valley, cultivation of rice declines giving priority to wheat. *Guizotia abyssinica*, an introduced oil yielding plant is largely cultivated in the southern part of the district and *Brassica* and *Linum* are practically absent. But the hilly southern tract beyond the Son Valley has very poor cultivated lands and greater part of it is covered with dense natural forests.

In addition to the agricultural products of the district mentioned above, orchards of fruit trees are also worth noting. These orchards are all restricted in the northern Gangetic plain and interesting fruit trees include *Psidium guajava*, *Zizyphus mauritiana* (large elliptical horticultural variety), *Citrus medica* and *Mangifera indica*. *Syzygium cumini*, a wild fruit tree is seen to be a successful embankment plantation along the course of canals.

ROADSIDE PLANTS OF MIRZAPUR

The common planted roadside trees of Mirzapur are almost the same as are met with in other parts of U.P. Within the township, the main trees are *Azadirachta indica*, *Tamarindus indica* and *Mangifera indica*. Other frequently planted trees are represented by *Dalbergia sissoo*, *Holoptelea integrifolia*, *Pongamia pinnata*, *Madhuca indica* and others. *Albizia lebbbeck*, *Cassia siamea*, *Ficus religiosa*, *F. bengalensis*, *Millingtonia hortensis* are occasionally represented among roadside trees. A uniform plantation along the roadside on the plateau is not yet completed and this is restricted only near about the villages and *Mangifera indica* is mainly represented as the roadside plants. Major part of the roadside trees on the plateau are representatives of the natural vegetation through which the roads have been constructed and they are represented by *Zizyphus mauritiana* and *Z. xylopyra*. *Madhuca indica* is a common roadside plant near the approaching hills and this is marked on way to Tanda. The same plantation is also noticeable while approaching the Kaimur range, from Chopan and also on way to Chunar. In some areas *Syzygium cumini* is a favourable roadside plantation as near Barkachha on the Mirzapur-Pipri road.

In the southern part of the district some of the forest trees like *Bridelia squamosa*, *Shorea robusta* and others are met with along the roadside, and more towards south *Acacia nilotica* is seen as a predominating member of the roadside plants and many of them are from original natural vegetation.

PARASITIC MEMBERS

The two common parasitic members seen in the different parts of the district include *Dendrophthoe falcata* and *Cuscuta reflexa*. The former has been found to grow extensively on *Dalbergia sissoo*. Other hosts e.g., *Mangifera indica*, *Madhuca indica*, etc., are there but these are insignificant in comparison to *D. sissoo*. A profuse growth of this parasite on *D. sissoo* is visible within the town and also in the outskirts. As compared to the heavy infection of *Dendrophthoe* in the north of the Son river valley the southern tract shows less infection and poor growth of this parasite on the forest trees. The other herbaceous twining parasite viz., *Cuscuta reflexa* is spread almost all over the district and mostly on different species of *Zizyphus*. However, during its profuse flowering condition no discrimination for the hosts has been noticed. It has been collected even on grasses during the month of September. Other hosts amongst the tree members include *Lagerstroemia parviflora*, *Ficus tomentosa*, *Wrightia tinctoria*, *Acacia catechu*. It has also been collected on *Mimosa rubicaulis*, *Acacia tortu* and others. The parasite is characterized by having yellow stem and one collected on *Ficus tomentosa* had purple stem.

AQUATIC VEGETATION

As the district does not enjoy more than an average of 1180 mm of rainfall in the year shallow lands are submerged only during the rainy season. The best aquatic vegetation is met with during the month of September. Submerged rice fields in post monsoon period support extensively growing *Sagittaria guayanensis*, *Oryza rufipogon*, *Dopatrium junceum* and *Aponogeton natans*. In shallow pools *Najas graminea* is a commonly occurring submerged aquatic. In newly exposed soil depressions particularly near brick-fields, water depositions are covered with *Wolffia microscopica*, *Lemna paucicostata* and with *Marsilea* sp. growing in the margins. Large ponds during the months of September-October are all covered with *Trapa bispinosa* whereas in other seasons they contain a few floating member of *Lemna* and *Pistia*. In depressions or in ponds where water could stand for a pretty long time, *Nymphaea nouchali*, *Ipomaea aquatica*, *Ottelia alismoides* and *Ludwigia adscendens* are quite common. Along the margins of such ponds, *Nymphoides cristatum* with pretty white flowers and submerged *Vallisneria spiralis* are frequently seen, the latter bearing flowers

during the colder months. In permanent aquatic zones or in water reservoirs *Ceratophyllum demersum*, *Hydrilla verticillata* form a thick network. In slow flowing streams *Potamogeton pectinatus* and *P. crispus* are abundant during the late cold months. In some of the permanent marshy areas, *Typha elephantina* and *T. angustata* are seen which on the other hand are always associated with *Potamogeton nodosus* and near about such aquatic zones *Tenagocharis latifolia* is a commonly occurring plant during the colder months. Other interesting aquatic collections during the months of September and October include *Microcarpaea mucosa*, *Blyxa auberti*, *Eriocaulon setaceum* and others. These three species grow in close vicinity and in the same habitat. Shady aquatic depressions near water falls are the home of these plants. *Monochoria vaginalis* and *Aponogeton crispum* also appear in this season. On slippery moist rocks, inside water falls an interesting aquatic is *Rotala serpyllifolia*, during the late cold months. *Jussiaea octovalis* subsp. *sessiflora*, *Hygrophila auriculata*, *Alternanthera sessilis* and *Caesulia axillaris* are some of the common marginal aquatic herbs during the post monsoon months. Amongst the aquatic grasses and sedges special mention should be made about *Coix gigantea* which was common near Upper Khajuri. *Scirpus articulatus*, *S. erectus*, *S. supinus* and *Cyperus dilutus* are some of the common aquatic sedges evenly spread all over the district. *Eichhornia crassipes* is found only in some uncared ponds but is not very common.

ENUMERATION

RANUNCULACEAE

Ranunculus sceleratus Linn.

Common along the bank of the Ganga, in flower (Feb. 7, 1961, Mirzapur). *Bhatt.* 12858.

ANNONACEAE

Annona squamosa Linn.

Common on the hill slopes at Vindhyachal, in flower (Sept. 17, 1961, Mzp.-Vindhyachal). *Bhatt.* 17532.

MENISPERMACEAE

Cissampelos pareira Linn.

On *Zizyphus* sp., in flower (Sept. 21, 1961, Mzp.-Kutwa). *Bhatt.* 17669, 17677.

Cocculus hirsutus (Linn.) Diels. (Syn. *C. villosus* DC.)

On *Zizyphus*, very common, in flower and fruit (Feb. 2, Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 12870, 13241, 13250, 18484.

Tinospora cordifolia (Willd.) Miers.

On *Zizyphus*, fairly common, in flower and fruit (Sept. 17-21, 1961; Mzp.-Kutwa, Tanda). *Bhatt.* 17519, 17609, 17685.

FUMARIACEAE

Fumaria indica (Haussk.) Pugsly.Occasional, on the Ganga bank, in flower (Feb. 7, 1961, Mzp.). *Bhatt.* 12862.

CRUCIFERAE

Cochlearia flava Ham.Occasional, on the Ganga bank, in flower (Feb. 11, 1961, Mzp.). *Bhatt.* 13682.**Eruca sativa** Mill.Occasional on the Ganga bank, in flower (Feb. 11, 1961, Mzp.). *Bhatt.* 13683.

CAPPARIDACEAE

Capparis zeylanica Linn. non Hk. f. & Th.On *Zizyphus*, common, in flower (Feb. 10, 1961, Mzp.-Bindam Falls). *Bhatt.* 13614.**Cleome viscosa** Linn.Very common in waste places, in flower (Sept. 17, 1961, Mzp.). *Bhatt.* 17524.**C. gynandra** Linn.Common in waste places, in flower (Sept. 17, 1961, Mzp.). *Bhatt.* 17528.

VIOLACEAE

Hybanthus enneaspermus (Linn.) F. V. Muell.Under bushes on the hill slope; common, in flower (Aug. 24, 1958; Sept. 18, Feb. 8, 1961, Mzp.-Chopan, Tanda, Vindhyachal). *M. A. Rau* 6139; *Bhatt.* 12887, 17564.

BIXACEAE

Polygala chinensis Linn.On old walls, occasional, in flower (Sept. 17, 1961, Mzp.). *Bhatt.* 17510.**P. eriopetra** DC.Fairly common on the hill slopes, in flower (Aug. 24, 1958; Sept. 18, 1961, Mzp.-Chopan-Vindhyachal). *M. A. Rau* 6158, 6176; *Bhatt.* 17570.

CARYOPHYLLACEAE

Saponaria vaccaria Linn.Weed in cultivated fields; very common, in flower and fruit (Feb. 11, 1961, Mzp.). *Bhatt.* 13678.**Spergula pentandra** Linn.Occasional on the bank of the Ganga, in flower (Feb. 11, 1961, Mzp.). *Bhatt.* 13675.

PORTULACACEAE

Portulaca oleracea Linn.Occasional, in flower (Aug. 24, 1958; Sept. 22, 1961, Mzp.-Chopan, Robertsgunge). *M. A. Rau* 6187; *Bhatt.* 17703.

MALVACEAE

Abutilon indicum (Linn.) Sweet.Fairly common in waste places, in flower (Sept. 17, 1961, Mzp.). *Bhatt.* 17521.**Hibiscus micranthus** Linn. f.Mostly in *Zizyphus* bushes, common, in flower and fruit (Feb. 8, Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 13252, 17619.**H. lobatus** (Murr.) O. Ktze.Very common on the hill slopes, in flower (Sept. 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17555.**H. ficulneus** Linn.Often cultivated, in flower (Sept. 22, 1961, Mzp.-Marihan). *Bhatt.* 17727.*** H. beddomei** Rakshit et KunduRare on the hill slope, in flower (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17710.**Malvastrum coromandelianum** (Linn.) GarckeCommon weed in shady places, in flower (Feb. 7 & 10, 1961; Mzp.-Kutwa). *Bhatt.* 12867, 13650.**Pavonia zeylanica** Cav.Common on the hill slopes under shades, in flower (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13264.**Sida acuta** Burm.In flower (Sept. 17, 1961, Mzp.). *Bhatt.* 17508.**S. rhombifolia** Linn.Common weed of waste places (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17735.**S. rhomboides** Roxb.A weed of waste places, fairly common, in flower (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13658.**S. spinosa** Linn.Common, in flower (Feb. 10, 1961; Sept. 18, 21, 1961, Mzp.-Kutwa, Vindhyachal). *Bhatt.* 13636, 17566, 17698.**S. veronicaefolia** Lamk.Common, in flower (Feb. 7, 8, 1961, Mzp.-Tanda). *Bhatt.* 12850, 13253.**Urena lobata** Linn.Weed in shady waste places, common, in flower (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13649.

STERCULIACEAE

Buettneria herbacea Roxb.Rare in forest undergrowth; in fruit (Dec. 11, 1961, Mzp.-Hathinala). *Bhatt.* 18360.**Melochia corchorifolia** Linn.Herb near water margin; very common, in flower (Sept. 17, 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17520, 17575.**Helicteris isora** Linn.Common on the hill slopes, in flower and fruit (Aug. 24, Sept. 22, 23, 1961, Mzp.-Chopan, Bindam, Robertsgunge). *M. A. Rau* 6161; *Bhatt.* 17707, 17746.**Sterculia urens** Roxb.In ravines; very common, in flower (Feb. 10, Sept. 23, 1961, Mzp.-Bindam). *Bhatt.* 13617, 17749.**Waltheria indica** Linn.Common on hill slopes and in waste ground, in flower (Feb. 10, Sept. 20, 1961, Mzp.-Kutwa, Bindam). *Bhatt.* 13624, 17663.

TILIACEAE

Corchorus aestuans Linn. non Forsk.Weeds of shady places and cultivated fields; very common, in flower (Aug. 23, 1958, Sept. 17, 1961, Mzp.-Chopan). *M. A. Rau* 6127; *Bhatt.* 17507.

Corchorus capsularis Linn.

Occasional in water logged field (Sept. 21, 1961, Mzp.-Kutwa). *Bhatt.* 17693.

C. fascicularis Lam.

Along the margins of ponds and in cultivated fields; fairly common (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13633.

C. olitorius Linn.

Occasional in waste places (Sept. 17, 1961, Mzp.). *Bhatt.* 17527.

Grewia disperma Rottl.

Fairly common, in flower (Aug. 23, 1958, Mzp.-Chopan). *M. A. Rau* 6117.

G. hirsuta Vahl

Common, in flower (Aug. 24, 1958, Mzp.-Agori). *M. A. Rau* 6152.

Var. **helicterifolia** (Wall.) Haines

Occasional, in fruit (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17706.

GERANIACEAE

Biophytum sensitivum DC.

In shady west facing soil slopes; common, in flower (Aug. 23, 1958; Feb. 10, Sept. 17, 1961, Mzp.-Chopan, Kutwa). *M. A. Rau* 6140; *Bhatt.* 13629, 17544.

BALSAMINACEAE (GERANIACEAE BH)

Impatiens balsamina Linn.

Running wild being escaped from cultivation, in flower (Sept. 19, 1961, Mzp.). *Bhatt.* 17662.

RUTACEAE

Citrus medica Linn.

Largely cultivated in orchards; in flower (Feb. 7, 1961, Mzp.). *Bhatt.* 12848.

BURSERACEAE

Boswellia serrata Roxb.

Abundant in the south of Son Valley, on south facing hill slopes (Dec. 10, 1961, Mzp.-Robertsgunge). *Bhatt.* 18336.

OLACACEAE

Olex scandens Roxb.

On *Zizyphus*, *Acacia* and *Butea*; very common, in flower and fruit (Feb. 10, Sept. 23, 1961, Mzp.-Bindam). *Bhatt.* 13618, 17751.

RHAMNACEAE

Ventilago calyculata Tul.

In ravines; in flower and fruit (Feb. 8, Dec. 7-9, 1961, Mzp.-Tanda, Sirsi). *Bhatt.* 13258, 18320, 18455.

Zizyphus mauritiana Lamk.

Abundant on the Vindhyan plateau; in flower and fruit (Aug. 23, 1958, Sept. 17, 19, 1961). *M. A. Rau* 6191; *Bhatt.* 17513, 17641.

Z. oenoplia Mill.

Abundant on hill slopes and on the plateau, in flower and fruit (Feb. 8, Sept. 18, Dec. 7, 1961, Mzp.-Tanda, Vindhyachal). *Bhatt.* 13251, 17584, 18474.

Z. xylopyra Willd.

Abundant on the hills; in fruit (Aug. 23, 1958, Feb. 8, 10; Sept. 18, 1961, Mzp.-Agori, Tanda, Vindhyachal, Kutwa). *M. A. Rau* 6120; *Bhatt.* 13261, 13666, 17616.

VITACEAE

Cayratia carnosia Gagnep.

Climbing on bushes; occasional, in flower and fruit (Sept. 17, Dec. 12, 1961, Mzp.-Chopan). *Bhatt.* 17546, 18376.

Leea edgeworthii Sant.

Shrub in the forest; fairly common, in fruit (Aug. 24, 1958, Mzp.-Agori). *M. A. Rau* 6163.

SAPINDACEAE

Cardiospermum halicacabum Linn.

On *Zizyphus*; occasional, in flower and fruit (Feb. 10, Sept. 17, 1961, Mzp.-Kutwa). *Bhatt.* 13657, 17515.

ANACARDIACEAE

Buchanania latifolia Roxb.

Fairly common (Dec. 10, 1961, Mzp.-Robertsgunge). *Bhatt.* 18337.

Semecarpus anacardium Linn.

Common in the forest, in fruit (Dec. 11, 1961, Mzp.-Hathinala). *Bhatt.* 18348.

LEGUMINOSAE

Abrus precatorius Linn.

On *Zizyphus*, common, in flower (Sept. 21, 1961, Mzp.-Kutwa). *Bhatt.* 17687.

Aeschynomene indica Linn.

In shallow water, common, in flower (Feb. 10, Sept. 18, 1961, Mzp.-Kutwa, Vindhyachal). *Bhatt.* 13651, 17583.

Alysicarpus bupleurifolius DC.

Very common in shady waste places, in flower (Feb. 10, Sept. 17, 1961, Mzp.-Kutwa). *Bhatt.* 13620, 17618.

A. hamosus Edgew.

Common on the hill slopes, in flower (Sept. 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17569.

A. monilifer DC.

Common in shady moist places (Aug. 24, 1958, Mzp.-Agori). *M. A. Rau* 6179.

A. vaginalis DC.

Very common on the hill slopes, in flower (Sept. 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17565.

Atylosia scarabaeoides Benth.

On *Zizyphus*, abundant, in flower (Feb. 8-10, 1961, Mzp.-Tanda, Kutwa). *Bhatt.* 13226, 13637.

Cantharospermum platycarpum (Benth.) Raiz.

Fairly common in bushes, in flower (Aug. 25, 1958, Mzp.-Chopan). *M. A. Rau* 6186.

Crotalaria albida Heyne

Common in the forest undergrowth, in flower (Dec. 11, 1961, Mzp.-Hathinala). *Bhatt.* 18358.

C. ferruginea Grah.

Occasional; growing gregariously on the slopes

of ponds, in flower (Sept. 22, 1961, Mzp.-Roberts-gunge). *Bhatt.* 17725.

Crotalaria juncea Linn.

Largely cultivated for fibres, in flower (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13224.

C. medicagenea Lamk.

A common weed of the waste places, in flower (Sept. 17, 1961, Mzp.). *Bhatt.* 17503.

C. prostrata Rottl.

Common on exposed soil on margin of ponds, in flower (Sept. 22, 1961, Mzp.-Roberts-gunge). *Bhatt.* 17556.

* ***C. quinquefolia*** Linn.

Occasional in water-logged cultivated field, in flower (Sept. 22, 1961, Mzp.-Roberts-gunge). *Bhatt.* 17732.

C. ramosissima Roxb.

Fairly common on rocky soil, in flower (Dec. 9, 1961, Mzp.-Sirsi). *Bhatt.* 18304.

Desmodium gangeticum (Linn.) DC.

Abundant in shady waste places, in flower (Aug. 24, 1958; Feb. 10, Sept. 19, 1961, Mzp.-Agori, Bindam, Tanda). *M. A. Rau* 6145; *Bhatt.* 13630, 17554.

D. heterocarpum (Linn.) DC.

Common on moist shady hill slope, in flower (Sept. 22-23, 1961, Mzp.-Roberts-gunge, Bindam). *Bhatt.* 17704, 17741.

D. triflorum DC.

Abundant in grassy fields, in flower (Sept. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13638.

Heylandia latebrosa DC.

Common on the hill slopes and in grassy fields, in flower (Feb. 8, Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 12878, 13676.

Indigofera astragalina DC.

Fairly common on the hill slopes, in flower (Sept. 23, 1961, Mzp.-Kutwa). *Bhatt.* 17757a.

I. cordifolia Heyne ex Roth

On dry hill tops; common, in flower (Sept. 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17529.

I. hirsuta Linn.

Common on dry hill slopes, in flower (Sept. 23, 1961, Mzp.-Kutwa). *Bhatt.* 17757b.

I. linifolia Retz.

Very common on the plateau, in flower (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13626.

I. linnaei Ali.

Very common in grassy fields, in flower (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17608.

I. tinctoria Linn.

Occasional on the plateau, in fruit (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13227.

I. trita Linn. f. var. *subulata*.

Occasional in waste places, in flower (Sept. 17, 1961, Mzp.). *Bhatt.* 17511.

I. trita Linn. f. var. *trita*.

Occasional in neglected fields, in fruit (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13639.

Lathyrus aphaca Linn.

Common, in flower (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.* 13603.

L. sativus Linn.

Cultivated, occasional as weed in Rice field, in flower (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13644.

Medicago denticulata Willd.

Common on Ganga banks, in flower and fruit (Feb. 11, 1961, Mzp.). *Bhatt.* 13686.

Melilotus alba Lamk.

Fairly common on the Ganga banks, in fruit (Feb. 11, 1961, Mzp.). *Bhatt.* 13690.

M. indica Ali.

Common on the Ganga banks, in flower (Feb. 11, 1961, Mzp.). *Bhatt.* 13684.

Moghania chappar (Ham. ex Bk.) O. Ktze.

Abundant in forest undergrowth, in fruit (Dec. 11, 1961, Mzp.-Hathinala). *Bhatt.* 18347, 18355.

Phaseolus aconitifolius Jacq.

Occasional on dry hill slopes, in flower (Sept. 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17567.

P. calcaratus Roxb.

Occasional, in flower (Aug. 25, 1958, Mzp.-Agori). *M. A. Rau* 6199.

P. trilobus Ait.

On the edges of cultivated fields, fairly common, in flower (Sept. 22, 1961, Mzp.-Roberts-gunge). *Bhatt.* 17734.

Pterocarpus marsupium Roxb.

Fairly common, in fruit (Dec. 9, 1961, Mzp.-Sirsi). *Bhatt.* 18323.

Rhynchosia minima DC.

On *Zizyphus* and *Carissa*; very common, in flower (Feb. 10, Sept. 19, 1961, Mzp.-Kutwa, Tanda). *Bhatt.* 13648, 17607.

R. capitata DC.

Occasional on dry hill tops, in flower (Sept. 21, 1961, Mzp.-Kutwa). *Bhatt.* 17696.

Sesbania bispinosa (Jacq.) W. F. Wight

Near water, fairly common, in flower (Sept. 22, 1961, Mzp.-Roberts-gunge). *Bhatt.* 17722.

S. sesban (Linn.) Merr.

Cultivated, in flower (Dec. 11, 1961, Mzp.-Hathinala). *Bhatt.* 18367.

Smithia geminiflora Roth

Near water, occasional but gregarious, in flower (Sept. 22, 1961, Mzp.-Roberts-gunge). *Bhatt.* 17721.

Tephrosia hirta Ham.

Fairly common on dry hill tops, in flower and fruit (Sept. 21, Dec. 9, 1961, Mzp.-Kutwa, Sirsi). *Bhatt.* 17697, 18329.

T. procumbens Ham.

Wild, in flower (Sept. 19, 1961, Mzp.-Vindhyachal). *Bhatt.* 17590.

T. purpurea (Linn.) Pers.

Common weed of waste places, in flower (Sept. 17, 1961, Mzp.). *Bhatt.* 17517.

Tephrosia tenuis Wall.

Common on dry hill slopes, in flower (Sept. 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17558.

Teramnus labialis Spr.

On *Zizyphus*; very common, in flower (Feb. 8, Sept. 17, 1961, Mzp.-Tanda). *Bhatt.* 13235, 13646, 17538.

Trigonella occulta Del.

Occasional by the side of pond, in flower (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13661.

Uraria neglecta Prain

Fairly common, in fruit (Aug. 24, 1958; Dec. 11, 1961, Mzp.-Agori, Hathinala). *M. A. Rau* 6148; *Bhatt.* 18340, 18356.

U. picta Desv.

Fairly common in forest undergrowth (Aug. 24, 1958, Mzp.-Agori). *M. A. Rau* 6149.

Vicia hirsuta (Linn.) Gray

In cultivated fields; common, in flower (Feb. 11, 1961, Mzp.). *Bhatt.* 13677.

V. sativa Linn.

Common weed in cultivated fields, in flower (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13212, 13218.

Vigna vexillata Benth.

Frequent in the forest, in flower (Aug. 24, 1958, Mzp.-Agori). *M. A. Rau* 6155.

Zornia diphylla (Linn.) Pers.

Common on dry hill slopes, in flower (Sept. 18, 21, 1961, Mzp.-Vindhyachal, Kutwa). *Bhatt.* 17560, 18426.

Bauhinia malabarica Roxb.

Very common (Dec. 11, 1961, Mzp.-Hathinala). *Bhatt.* 18363.

B. purpurea Linn.

Common in Son Valley, in flower (Dec. 12, 1961, Mzp.-Chopan). *Bhatt.* 18380.

B. racemosa Lamk.

Fairly common, in fruit (Dec. 11, 1961, Mzp.-Hathinala) *Bhatt.* 18369.

Cassia absus Linn.

Fairly common, in flower (Aug. 25, 1958; Sept. 19, 1961, Mzp.-Chopan, Tanda). *M. A. Rau* 6198; *Bhatt.* 17603.

C. mimosoides Linn.

Very common, in flower (Aug. 25, 1958; Sept. 18, 1961). *M. A. Rau* 6197; *Bhatt.* 17557.

C. siamea Lamk.

Road side planted, in flower (Feb. 9, Dec. 9, 1961, Mzp.-Sirsi). *Bhatt.* 13299, 18301.

Hardwickia binata Roxb.

(Dec. 12, 1961, Mzp.-Hathinala). *Bhatt.* 18392.

Acacia catechu Willd.

Common tree on dry hill slopes and on the plateau; in flower (Aug. 24, 1958; Feb. 8, Sept. 19, Dec. 7, 1961, Mzp.-Chopan, Tanda). *M. A. Rau* 6154; *Bhatt.* 12874, 17636, 18476.

A. leucophlaea Willd.

On dry hills, in flower (Feb. 8, Sept. 18, 1961, Mzp.-Tanda, Vindhyachal). *Bhatt.* 12881, 17578.

A. nilotica (Linn.) Del.

Common tree on the plateau (Sept. 21, 1961, Mzp.-Kutwa). *Bhatt.* 17679.

A. torta (Roxb.) Craib.

Fairly common in the hills, in fruit (Aug. 24, 1958; Dec. 7, 1961, Mzp.-Agori, Tanda). *M. A. Rau* 1653; *Bhatt.* 18471.

Albizia odoratissima Benth. var. *mollis*.

On hill slope, fairly common (Dec. 10, 1961, Mzp.-Roberts-gunge). *Bhatt.* 18343.

Mimosa rubicaulis Lamk.

Common on hill slopes and in ravines, in flower (Sept. 19, Dec. 10, 1961, Mzp.-Tanda, Roberts-gunge). *Bhatt.* 17646, 18346.

Pithecellobium dulce Benth.

Planted, in flower (Feb. 9, 1961, Mzp.). *Bhatt.* 13300.

ROSACEAE

Potentilla supina Linn.

Common on shady shallow ground, in flower (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.* 13284.

COMBRETACEAE

Anogeissus latifolia Wall.

Common forest tree in the south of the Son Valley, in fruit (Dec. 10, 1961, Mzp.-Roberts-gunge). *Bhatt.* 18344.

A. pendula Edgew.

Gregarious in ravines and hill slopes, in fruit (Feb. 8, Dec. 12, 1961, Mzp.-Tanda). *Bhatt.* 13249, 18477.

Combretum decandrum Roxb.

Abundant in Kaimur foot hills, in flower (Dec. 12, 1961, Mzp.-Chopan). *Bhatt.* 18379.

Terminalia arjuna W. & A.

Ravines often near water, common, in fruit (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.*

T. belerica Roxb.

Planted occasional, in fruit (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 12891.

LYTHRACEAE

Ammannia baccifera Linn.

On moist soil, very common, in flower (Feb. 8, 9, 1961, Mzp.-Tanda). *Bhatt.* 12895, 13612.

A. salicifolia Hiern (non Monti.)

In flower (Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 18481.

Lagerstroemia parviflora Roxb.

Common on the hill slopes and ravines, in fruit (Feb. 8, Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 13249, 17637.

Lawsonia inermis Linn.

Wild near Tanda, in fruit (Feb. 8, Sept. 18, 1961, Mzp.-Tanda). *Bhatt.* 13244, 17596.

Woodfordia fruticosa Kurz

Common near Tanda and abundant towards south of Hathinala; in flower (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.*

Rotala indica Koehne

In marshy places, in flower (Dec. 7, 9, 1961, Mzp.-Sirsi). *Bhatt.* 18313, 18492, 18493.

R. serpyllifolia (Roth) Bren.

On slimy rocks in flowing stream; occasional, in flower (Feb. 9, 1961, Mzp.-Tanda Falls). *Bhatt.* 13607.

ONAGRACEAE

Ludwigia perennis Linn.

Weed in moist cultivated field, in flower and fruit (Feb. 9, Sept. 17, 1961, Mzp.-Tanda). *Bhatt.* 13277, 17514.

L. octovalvis subsp. **sessiliflora** (Mich.) Raven

Very common around Tanda swamp, in flower and fruit (Sept. 19, Dec. 9, 1961, Mzp.-Tanda, Sirsi). *Bhatt.* 17658, 18311.

HYDROCARYACEAE (ONAGRACEAE BH)

Trapa natans Linn. var. **bispinosa** (Roxb.) Makino.

Abundant in tanks around Mirzapur, in flower and fruit (Sept. 17, 1961, Mzp.). *Bhatt.* 17523.

PASSIFLORACEAE

***Passiflora foetida** Linn.

On *Zizyphus*, common, in flower and fruit (Sept. 21, 1961, Mzp.-Kutwa). *Bhatt.* 17691.

CUCURBITACEAE

Blastania garcinii (Linn.) Cogn.

On *Zizyphus*, in flower and fruit (Sept. 18, 1961, Mzp.-Tanda). *Bhatt.* 17629.

Bryonopsis laciniosa (Linn.) Naud.

Common on hedges, in flower (Sept. 22, 1961, Mzp.-Marihan). *Bhatt.* 17733.

Coccinia cordifolia (Linn.) Cogn.

Fairly common, in flower (Feb. 11, 1961, Mzp.). *Bhatt.* 13676.

C. cordifolia (Linn.) Cogn. var. **palmata** W. & A.

Rare on hedges, in flower (Sept. 18, 1961, Mzp.). *Bhatt.* 17595.

Melothria maderaspatana Cogn.

In flower (Sept. 17, 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17529, 17573.

Momordica charantia Linn.

Often cultivated, in flower and fruit (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17724.

M. dioica Roxb.

In flower and fruit (Sept. 17-18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17525, 17549.

Trichosanthes cucumerina Linn.

In flower and fruit (Aug. 23, 1958, Feb. 10, 1961; Sept. 22, 1961, Mzp.-Chopan, Kutwa, Robertsgunge). *M. A. Rau* 6132; *Bhatt.* 13627, 17723.

MOLLUGINACEAE

Mollugo pentaphylla Linn.

In cultivated fields, common (Sept. 20, Dec. 9, 1961, Mzp.-Kutwa, Sirsi). *Bhatt.* 17664.

AIZOACEAE

Trianthema portulacastrum Linn.

On exposed soil, in flower (Sept. 17, 1961, Mzp.). *Bhatt.* 17530.

RUBIACEAE

Adina cordifolia Hook. f.

Fairly common in the Son Valley forests, in flower (Aug. 24, 1958; Dec. 11, 1961, Mzp.-Chopan). *M. A. Rau* 6121; *Bhatt.* 18362.

Borreria articularis (Linn. f.) F. N. Will.

Abundant on hill slopes, in flower (Aug. 23, 1958, Mzp.-Chopan; Feb. 9, Sept. 18, 21, 1961, Mzp.-Tanda, Vindhyachal, Kutwa). *M. A. Rau* 6112, 6115; *Bhatt.* 13295, 17563, 17680.

B. stricta (Linn. f.) Schum.

Common on hill slopes, in flower (Sept. 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17580.

Dentillaria corymbosa (Willd.) Ktz.

In flower (Dec. 11, 1961, Mzp.-Hathinala). *Bhatt.* 18359.

Gardenia latifolia Ait.

On the ravine slopes, common (Feb. 10, Sept. 23, 1961, Mzp.-Bindam). *Bhatt.* 13784, 17745.

Hamiltonia suaveolens Roxb.

In rocky ravines, fairly common, in flower (Dec. 10, 1961, Mzp.-Robertsgunge). *Bhatt.* 18341.

Hymenodictyon exelsum (Roxb.) Wall.

Abundant in ravines, in fruit (Dec. 9, 1961, Mzp.-Sirsi). *Bhatt.* 18303.

Oldenlandia corymbosa Linn.

In flower (Feb. 9, Sept. 17, 20, 1961, Mzp.-Tanda, Kutwa). *Bhatt.* 13609, 17522, 17665.

Gonstheca ovatifolia (Cav.) Sant. & Wagh

On moist shady hill slope, in flower (Sept. 23, 1961, Mzp.-Vindam). *Bhatt.* 17753.

Randia uliginosa DC.

Common in forest, in fruit (Dec. 11, 1961, Mzp.-Hathinala). *Bhatt.* 18361.

Mitragyna parvifolia (Roxb.) Korth.

Sandstone ravines, common (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.* 13283.

CAMPANULACEAE

Campanula canescens Wall.

Occasional on the Ganga banks, in flower (Feb. 7, 1961, Mzp.). *Bhatt.* 12868.

PLUMBAGINACEAE

Plumbago zeylanica Linn.

Occasional on hill slopes, in flower (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17630.

PRIMULACEAE

Anagallis arvensis Linn.

On moist ground, common, in flower (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 12880.

COMPOSITAE

***Acanthospermum hispidum** DC.

Very common, in fruit (Feb. 10, Sept. 18, 1961, Mzp.-Kutwa, Vindhyachal). *Bhatt.* 13634, 17550.

Ågeratum conyzoides Linn.

Abundant (Feb. 9, 1961, Mzp.). *Bhatt.* 13280.

Bidens biternata (Lour.) Merr. & Sherff.

Common on hill slopes (Sept. 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17562.

- Blainvillea acmella** (Linn. f.) Philipson
In waste places, common (Aug. 25, 1958; Sept. 17, 1961, Mzp.-Chopan). *Bhatt.* 17512.
- Blumea membranacea** (Wall.) DC.
In shady rock crevices, occasional (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.* 13265.
- B. mollis** (Don.) Merr.
Common (Feb. 7, 1961, Mzp.). *Bhatt.* 12871.
- B. napifolia** (Wall.) DC.
Fairly common (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.* 13294.
- B. oxyodonta** (Wall.) DC.
On moist ground, common (Feb. 10, 1961, Mzp.-Bindam). *Bhatt.* 13623.
- Caesulia axillaris** Roxb.
Near water margin, common (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 12894.
- Carthamus tinctorius** Linn.
Cultivated with wheat (Feb. 11, 1961, Mzp.). *Bhatt.* 13688.
- Centipeda minima** (Linn.) A. Br. et Aschers.
On moist ground (Feb. 7, 1961, Mzp.). *Bhatt.* 12840.
- Chrysanthellum indicum** DC.
Common (Sept. 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17552.
- Cyathocline purpurea** (Don.) Kuntze
On moist shady rocks, common (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.* 13267.
- Echinops echinatus** Roxb.
Common, in flower (Feb. 8, 1961, Mzp.). *Bhatt.* 12892.
- Eclipta prostrata** (Linn.) Linn.
On moist ground, common (Feb. 7, 8, 1961, Mzp.). *Bhatt.* 12851, 12893.
- Elephantopus scaber** Linn.
Common (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17719.
- Emilia sonchifolia** (Linn.) DC.
Common (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13654.
- Glossocardia bosvallea** (Linn. f.) DC.
On dry hill slopes, common, in flower (Sept. 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17581.
- Gnaphalium indicum** Linn.
On Ganga banks, common (Feb. 7, 1961, Mzp.). *Bhatt.* 12872.
- G. pulvinatum** Delile
On moist ground, common (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13662.
- Grangea maderaspatana** (Linn.) Poir.
On moist ground, fairly common (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13221.
- Guizotia abyssinica** Cass.
Oil yielding, cultivated (Dec. 12, 1961, Mzp.-Chopan). *Bhatt.* 18377.
- Bhimeopsis flacata** (D. Don) Merr.
Common (Dec. 11, 1961, Mzp.-Hathinala). *Bhatt.* 18349.

- Launaea nudicaulis** Hook. f.
Common on dry hill slopes (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13233.
- Pulicaria angustifolia** DC.
On dry hills, common (Sept. 17, 21, Dec. 7, 1961, Mzp.-Kutwa, Tanda). *Bhatt.* 17531, 17683, 18478.
- Sonchus asper** (Linn.) Hill.
Fairly common (Feb. 7, 1961, Mzp.). *Bhatt.* 12863.
- Sphaeranthus indicus** Linn.
On moist ground, fairly common (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13225.
- Spilanthes acmella** Linn.
Planted (Dec. 8, 1961, Mzp.). *Bhatt.* 18334.
- Tridax procumbens** Linn.
On decaying walls. (Feb. 7, 1961, Mzp.). *Bhatt.* 12846.
- Vernonia cinerea** (Linn.) Less.
Common (Feb. 7, 1961, Mzp.). *Bhatt.* 12847.
- Vicoa indica** (Willd.) DC.
Common on hill slopes (Feb. 9, Dec. 9, 1961, Mzp.-Sirsi). *Bhatt.* 13273, 18330.

SAPOTACEAE

- Manilkara hexandra** (Roxb.) Dub.
Planted, in flower (Feb. 11, 1961, Mzp.). *Bhatt.* 13679.
- Palaquium bourdillonii** Brandis
Planted, in flower (Dec. 8, 1961, Mzp.). *Bhatt.* 18326.

OLEACEAE

- Nyctanthes arbor-tristis** Linn.
Abundant on hill slopes at Chunar, in flower and fruit (Feb. 9, Sept. 18, 1961, Mzp.-Tanda). *Bhatt.* 13288, 17612.

APOCYNACEAE

- Carissa opaca** Stapf
Abundant on hill slopes, in flower and fruit (Feb. 8, 10, 1961, Mzp.-Tanda, Kutwa). *Bhatt.* 13236, 13622.
- Holarrhena antidysenterica** (Linn.) Wall.
Abundant near U. Khajuri, in flower and fruit (Sept. 23, 1961, Mzp.-Bindam). *Bhatt.* 17755.
- Ichnocarpus frutescens** (Linn.) R. Br.
On *Zizyphus* & *Acacia*, abundant, in flower (Feb. 8, Sept. 19, Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 13247, 17627, 18483.
- Rauvolfia tetraphylla** Linn.
In shady waste places. Fairly common along Ganga banks, in flower and fruit (Feb. 7, Dec. 8, 1961, Mzp.). *Bhatt.* 12843, 18325.
- Wrightia tinctoria** R. Br.

In sand stone ravines and on hill slopes, very common, in flower and fruit (Feb. 8, Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 13236, 17621.

ASCLEPIADACEAE

- Calotropis procera** Br.
In waste grounds on the banks of reservoirs, in flower (Feb. 8, 1961, Mzp.-Tanda).

Cryptolepis buchanani Roem. & Schult.

On hedges, common, in flower and fruit (Aug. 24, 1958; Feb. 10, 1961, Mzp.-Chopan, Kutwa). *M. A. Rau* 6173; *Bhatt.* 13653.

Dregea volubilis (Linn. f.) Benth. ex Hook. f.

On *Zizyphus*, fairly common (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13259.

Gymnema sylvestre (Retz.) Schult.

On *Zizyphus*; very common, in flower (Feb. 8, Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 13256, 17631.

Hemidesmus indicus (Linn.) Schult.

On *Zizyphus*, very common, in flower (Aug. 24, 1958, Sept. 19, 1961, Mzp.-Agori, Tanda). *M. A. Rau* 6169; *Bhatt.* 17651.

H. indicus (Linn.) Schult. var. **pubescence** (W. & A.) Hook. f.

On *Zizyphus*, occasional, in flower (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17713.

Marsdenia tenacissima W. & A.

On *Zizyphus*, occasional, vegetative (Dec. 12, 1961, Mzp.-Hathinala). *Bhatt.* 18384.

Marsdenia sp.

On the top of *Zizyphus*, vegetative (Sept. 21, 1961, Mzp.-Kutwa). *Bhatt.* 17692.

Pergularia daemia (Forsk.) Chiov.

On *Zizyphus*, common, in flower and fruit (Feb. 10, Sept. 21, 1961, Mzp.-Kutwa). *Bhatt.* 13664, 17689.

Telosma pallida (Roxb.) Craib.

On *Zizyphus*, common, in flower and fruit (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17610, 17611.

LOGANIACEAE

Buddleia asiatica Lour.

On Ganga banks, fairly common, in flower (Feb. 7, 1961, Mzp.). *Bhatt.* 12860.

GENTIANACEAE

Canscora decussata Roem. & Schult.

Fairly common, in flower (Dec. 8, 1961, Mzp.). *Bhatt.* 18327.

C. diffusa (Vahl) R. Br.

On shady places, common, in flower (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 12882.

Enicostema hyssopifolium (Willd.) Verdon

Common on moist ground, in flower (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17606.

Exacum pedunculatum Linn.

Near marshy ground, common, in flower (Feb. 8, Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 12884, 18467.

Hoppea dichotoma Willd.

On moist ground, fairly common, in flower (Feb. 8, Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 12899, 18383.

Nymphoides cristatum (Roxb.) O. Kuntze

Common in shallow ponds, in flower (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 12884.

HYDROPHYLLACEAE

Hydrolea zeylanica (Linn.) Vahl

Fairly common in drying Nullahs, in flower (Dec. 7, 1961, Mzp.-Tanda). *Bhatt.*

BORAGINACEAE

Coldenia procumbens Linn.

On south facing slopes of vast water reservoirs, fairly common, in flower (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13237.

Heliotropium strigosum Willd.

On grassy fields, common, in flower (Aug. 13, 1958, Mzp.-Agori). *M. A. Rau* 6118.

Trichodesma indicum (Linn.) R. Br.

Fairly common, in flower (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17640.

CUSCUTACEAE

Cuscuta reflexa Roxb.

On *Zizyphus*, *Lagerstroemia*, *Ficus*, *Anogeissus*, *Wrightia*, *Acacia*, *Apluda*, *Cassia*, *Abrus*, *Mimosa*; abundant, in flower (Feb. 8, Sept. 19, Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 13239, 17633, 17634, 17635, 18482, 18486, 18487, 18488, 18490.

CONVOLVULACEAE

Erycibe paniculata Roxb.

On the corner of water falls, in flower & fruit (Feb. 9, Dec. 7, 9, 1961, Mzp.-Tanda, Sirsi). *Bhatt.* 13291, 18321, 18470.

Evolvulus alsinoides (Linn.) Linn.

Very common, in flower (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13246.

E. nummularius Linn.

Common on grassy fields, in flower (Feb. 7, 1961, Mzp.). *Bhatt.* 12844.

Ipomoea aquatica Forsk.

Common in ponds and pools, in flower (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17730.

I. eriocarpa R. Br.

Common in cultivated fields, in flower (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13632, 17684.

I. nil (Linn.) Roth

On *Zizyphus*, very common during rainy season, in flower (Sept. 23, 1961, Mzp.-Kutwa). *Bhatt.* 17760.

I. obscura Ker.

On *Zizyphus*, common, in flower (Feb. 10, Sept. 19, Dec. 7, 1961, Mzp.-Kutwa, Tanda). *Bhatt.* 13665, 17602, 18485.

I. pes-tigridis Linn.

Common in bushes, in flower (Aug. 23, 1958, Mzp.-Chopan). *M. A. Rau* 6129.

I. pilosa Sweet.

On *Zizyphus*, fairly common, in flower (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13645.

I. quamoclit Linn.

On *Zizyphus*, common, in flower (Sept. 23, 1961, Mzp.-Kutwa). *Bhatt.* 17750.

I. maxima (Linn. f.) Don. ex Sweet.

On *Zizyphus*, fairly common, in flower (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17728.

Merremia aegyptia (Linn.) Urban.

On *Zizyphus*, occasional, in flower (Sept. 23, 1961, Mzp.-Bindam). *Bhatt.* 17756.

Merremia hederacea (Burm. f.) Hallier.

Fairly common, in flower (Feb. 10, 1961, Mzp.-Tanda, Kutwa). *Bhatt.* 13602, 13632.

M. tridentata (Linn.) Hall. f.

Common on open fields and in *Zizyphus* bushes, in flower (Sept. 21, 1961, Mzp.-Kutwa). *Bhatt.* 17671.

Porana paniculata Roxb.

On *Zizyphus* and *Acacia*, common, in flower (Dec. 12, 1961, Mzp.-Chopan). *Bhatt.* 18375.

Rivea hypocrateriformis Choisy.

On *Zizyphus*, common, in fruit (Sept. 21, 1961, Mzp.-Kutwa). *Bhatt.* 17682.

R. ornata Choisy var. **Griffithii** Cl.

Fairly common, in flower (Aug. 24, 1958, Mzp.-Agori). *M. A. Rau* 6160.

SOLANACEAE

Datura innoxia Mill.

Common in waste places, in flower (Feb. 9, 1961, Mzp.). *Bhatt.* 13289.

D. metel Linn.

In flower (Feb. 11, 1961, Mzp.). *Bhatt.* 13667.

Physalis minima Linn.

Fairly common on hill slopes, in flower (Sept. 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17561.

P. peruviana Linn.

In flower (Feb. 9, 1961, Mzp.). *Bhatt.* 13290.

Solanum incanum Linn.

Common, in flower (Sept. 9, 1961, Mzp.-Kutwa). *Bhatt.* 17688.

S. indicum Linn.

Common, in flower and fruit (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13625.

S. nigrum Linn.

Common in shady places, in flower and fruit (Feb. 7, 1961, Mzp.). *Bhatt.* 12853.

S. surattense Burm. f.

Fairly common in waste places, in flower (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13230.

SCROPHULARIACEAE

Bacopa monnieri (Linn.) Pennel

Near water, common, in flower (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.* 13268.

Centranthera nepalensis D. Don

On the margins of cultivated fields, occasional, in flower (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17717.

Dopatrium juncum (Roxb.) Buch.-Ham. ex Benth.

In moist cultivated fields, in flower (Sept. 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17599.

Glossostigma spathulatum Arn.

Fairly common, in flower (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13663.

Kickxia ramosissima (Wall.) Janchen.

Common on river banks, in flower (Feb. 7, 1961, Mzp.). *Bhatt.* 12861.

Limnophila heterophylla Benth.

Aquatic, common, in flower (Feb. 8, Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 12883.

L. indica (Linn.) Druce.

Aquatic, occasional, in flower (Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 18466.

L. racemosa Benth.

Aquatic; fairly common, in flower (Sept. 23, 1961, Mzp.-Bindam). *Bhatt.* 17752.

Lindenbergia indica (Linn.) O. Ktze.

Common, in flower (Feb. 7, Dec. 7, 1961, Mzp.). *Bhatt.* 12854, 17536.

Lindernia anagallis (Burm.) Pennell

On moist cultivated fields, common, in flower (Sept. 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17588.

L. ciliata (Colsm.) Pennell

On moist ground, common, in flower (Aug. 23, 1958; Sept. 18, 1961, Mzp.-Chopan, Vindhyachal). *M. A. Rau* 6110; *Bhatt.* 17551.

L. crustacea (Linn.) F. V. Muell

In shady places, common, in flower (Sept. 19, 1961, Mzp.-Kutwa). *Bhatt.* 17655.

L. pyxidaria (Maxim.) All.

On moist ground, occasional, in flower (Feb. 8, 1962, Mzp.-Tanda). *Bhatt.* 12886.

Mazus japonicum (Thunb.) O. Ktze.

Common in shady waste places, in flower (Feb. 11, Dec. 11, 1961, Mzp.-Hathinala). *Bhatt.* 13685, 18371.

Microcarpea muscosa R. Br.

Floating, rare, in flower (Sept. 23, 1961, Mzp.-Bindam). *Bhatt.* 17762.

Scoparia dulcis Linn.

In waste places, common, in flower (Aug. 24, 1958; Feb. 11, 1961, Mzp.-Agori). *M. A. Rau* 6180; *Bhatt.* 13671.

Sopubia delphinifolia G. Don

On moist grassy lands, common, in flower (Sept. 23, 1961, Mzp.-Bindam). *Bhatt.* 17747.

Striga euphrasioides Benth.

In cultivated fields, common, in flower (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17604.

Sutera dissecta (Del.) Walp.

Common on the Ganga banks, in flower (Feb. 7, 1961, Mzp.). *Bhatt.* 13780.

Veronica anagallis Linn.

Common in marshy places, in flower (Feb. 7, 1961, Mzp.). *Bhatt.* 12866.

OROBANCHACEAE

Orobanche aegyptiaca Pers.

Parasitic in Gram and Mustard field, very common, in flower (Feb. 11, 1961, Mzp.). *Bhatt.* 13668.

LENTIBULARIACEAE

Utricularia exoleta R. Br.

Aquatic, associated with *Chara*, occasional, in flower (Feb. 8, 1961, Mzp.-Tanda swamp). *Bhatt.* 12888.

BIGNONIACEAE

Heterophragma adenophyllum Seem.

Planted, in fruit (Dec. 8, 1961, Mzp.). *Bhatt.* 18324.

PEDALIACEAE

Sesamum mulaynum Nair

Common, in flower (Aug. 24, 1958, Sept. 21, 1961, Mzp.-Agori, Kutwa). *M. A. Rau* 6151; *Bhatt.* 17700.

ACANTHACEAE

Andrographis echinoides (Linn.) Nees

Fairly common, in flower (Feb. 9, Sept. 18, 1961, Mzp.-Tanda, Vindhyachal). *Bhatt.* 13605, 17554.

Barleria prionitis Linn.

Fairly common, in flower (Sept. 17, 1961, Mzp.). *Bhatt.* 17533.

Blepharis maderaspatensis (Linn.) Heyne ex Roth

On shady hill slopes, in flower (Sept. 22, Dec. 10, 1961, Mzp.-Robertsgunge). *Bhatt.* 17714, 18339.

Dipteracanthus prostratus (Poir.) Nees

In shady places, common, in flower (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13640.

Elytaria acaulis (Linn. f.) Lindan.

Common, in flower (Feb. 9, 1961, Mzp.-Tanda) *Bhatt.* 13274.

Hemigraphis latebrosa Nees

In shady rock slope, fairly common, in flower (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.* 13266.

Hygrophila auriculata (Schum.) Heine

In shallow water, common, in flower (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 12900.

H. polysperma T. Anders.

Near water, common, in flower (Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 18495.

Justicia simplex Don.

Common on dry hill slopes, in flower (Feb. 7, 9, 1961, Mzp.-Tanda). *Bhatt.* 12849, 13275.

J. diffusa Willd.

Common on hills, in flower (Sept. 17, Dec. 6, 1961, Mzp.-Vindhyachal). *Bhatt.* 17509, 18453.

J. quinqueangularis Koen. ex Roxb.

In moist cultivated fields; common, in flower (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17731.

J. peploides T. Anders.

In moist cultivated fields, very common, in flower (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17643.

Lepidagathis trinervis Nees

On dry rocky soil, common, in flower (Feb. 8, Sept. 18, 21, Dec. 9, 1961, Mzp.-Tanda, Kutwa). *Bhatt.* 13279, 17559, 17673, 18302.

L. hamiltoniana Wall.

Fairly common, in flower (Dec. 11, 1961, Mzp.-Hathinala). *Bhatt.* 18368.

Peristrophe bicalyculata Nees

Common, in flower (Feb. 9, Sept. 21, 1961, Mzp.-Tanda, Kutwa). *Bhatt.* 13281, 17672.

Ruellia tuberosa Linn.

Common, in flower (Sept. 18, 1961, Mzp.). *Bhatt.* 17587.

Rungia pectinata (Linn.) Nees

In shady hill slopes, common, in flower (Dec. 9, 1961, Mzp.-Sirsi). *Bhatt.* 18306.

Staurogyne glutinosa O. Ktze.

Fairly common on shady rock slopes, in flower (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.* 13783.

VERBENACEAE

Clerodendrum phlomidis Linn. f.

Occasional, in flower (Feb. 9, 1961, Mzp.). *Bhatt.* 13270.

C. serratum (Linn.) Moon

On shady banks of ponds, occasional, in flower (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17726.

Duranta plumieri Jacq.

On hedges, in flower and fruit (Feb. 9, 1961, Mzp.). *Bhatt.* 13297.

Premna mucronata Roxb.

On hill slopes, occasional, in fruit (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17638.

Vitex negundo Linn.

Common, in flower (Dec. 12, 1961, Mzp.-Chopan). *Bhatt.* 18374.

LABIATAE

Anisochilus carnosus Wall.

In rock crevices, common, in flower (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17711.

Anisomeles indica (Linn.) O. Ktze.

Common, in flower (Sept. 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17589.

Hyptis suaveolens Poit.

In flower (Feb. 10, Dec. 6, 1961, Mzp.-Kutwa, Vindhyachal). *Bhatt.* 13635, 18454.

Leucas cephalotes Spreng.

Common in cultivated fields, in flower (Feb. 8, Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 12876, 17605.

L. clarkei Hook. f.

Common in cultivated fields, in flower (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17701.

L. nutans Spreng.

In cultivated fields, common, in flower (Sept. 23, 1961, Mzp.-Kutwa). *Bhatt.* 17667.

L. urticaefolia R. Br.

On moist shady waste places, occasional, in flower (Dec. 7, 1961, Mzp.). *Bhatt.* 18499.

Leonotis nepetaefolia R. Br.

Occasional, in flower (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17718.

Nepeta hindostana (Roth) Haines

Common, in flower (Feb. 7, Dec. 7, 1961, Mzp.). *Bhatt.* 12859, 12864, 18498.

Ocimum basilicum Linn.

Common, in flower (Feb. 9, 11, Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 13271, 18673, 18497.

O. sanctum Linn.

Fairly common, in flower (Feb. 11, 1961, Mzp.). *Bhatt.* 13672.

Orthosiphon pallidus Royle

In open grassy land near ponds, in flower (Sept. 19, 1961, Mzp.). *Bhatt.* 17620.

Plectranthus mollis (Ait.) Spreng.

Along the margins of boulders on sandstone hills (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17716.

Salvia plebeia R. Br.

On waste ground, in flower (Feb. 7, 1961, Mzp.). *Bhatt.* 12855.

PLANTAGINACEAE

Plantago pumila Willd.

On the Ganga banks, rare, in flower (Feb. 11, 1961, Mzp.). *Bhatt.* 13680.

NYCTAGINACEAE

Boerhavia diffusa Linn.

On old walls, very common, in flower (Aug. 23, 1958, Mzp.-Chopan). *M. A. Rau* 6128.

B. chinensis (Burm. f.) Druce

On bushes, common, in flower (Sept. 23, 1961, Mzp.-Kutwa). *Bhatt.* 17754.

AMARANTHACEAE

Achyranthes aspera Linn.

Common in waste places (Feb. 9, 1961, Mzp.). *Bhatt.* 13604.

Aerva lanata (Linn.) Juss.

Common in waste places, in flower (Feb. 7, 1961, Mzp.). *Bhatt.* 12873.

Allmania nodiflora Br.

Occasional, in flower (Aug. 23, 1958, Chopan-Mzp.). *M. A. Rau* 6109.

Alternanthera sessilis (Linn.) DC.

Near water or shady grounds, common, in flower (Aug. 25, 1958; Feb. 8, 1961, Mzp.-Chopan, Tanda). *M. A. Rau* 6188; *Bhatt.* 13257.

Amaranthus spinosus Linn.

Common in waste places, in flower (Aug. 25, 1958, Mzp.-Chopan). *M. A. Rau* 6194.

A. viridis Linn.

Common in shady waste places (Feb. 9, 1961, Mzp.). *Bhatt.* 13606.

Celosia argentea Linn.

In moist cultivated field, common, in flower (Feb. 8, Sept. 20, 1961, Mzp.-Kutwa-Tanda). *Bhatt.* 13260, 17666.

Digera alternifolia (Linn.) Aschers. in Schwcin.

In cultivated fields, fairly common, in flower (Aug. 25, 1958; Sept. 29, 1961, Mzp.-Chopan, Kutwa). *M. A. Rau* 6190; *Bhatt.* 17542.

Gomphrena celosioides Mart.

Fairly common, in flower (Feb. 7, 1961, Mzp.). *Bhatt.* 12841.

Notholaerva brachiata Wight

Under tree shade, fairly common, in flower (Feb. 7, Sept. 18, 1961, Mzp.). *Bhatt.* 12869, 17591.

Pupalia lappacea (Linn.) Juss.

On dry hill slopes, common, in fruit (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17613.

CHENOPODIACEAE

Chenopodium album Linn.

Cultivated, common, in flower (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 12879.

Basella rubra Linn.

Planted, rare, in flower (Dec. 9, 1961, Mzp.-Sirsi). *Bhatt.* 18322.

POLYGONACEAE

Polygonum hydropiper Linn.

Near water margin, fairly common, in flower (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13234.

P. plebejum R. Br.

On moist ground, very common, in flower (Feb. 8, 9, 1961, Mzp.-Tanda). *Bhatt.* 12852, 12875.

Rumex dentatus Linn.

On moist ground, common, in flower and fruit (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 12877.

ARISTOLOCHIACEAE

***Aristolochia indica** Linn.

On *Zizyphus*, common, in flower and fruit (Sept. 21, 1961, Mzp.-Kutwa). *Bhatt.* 17690.

LORANTHACEAE

Dendrophthoe falcata (Linn. f.) Etting.

Abundant on *Dalbergia sissoo*, in flower (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.* 13278.

EUPHORBIACEAE

Acalypha ciliata Forsk.

In shady places, occasional, in flower (Aug. 25, 1958, Mzp.-Chopan). *M. A. Rau* 6193.

A. indica Linn.

In shady waste places, fairly common, in flower (Feb. 9, 1961, Mzp.). *Bhatt.* 13269.

Antidesma gheasaembilla Gaertn.

Fairly common, in flower (Aug. 24, 1958, Mzp.-Chopan). *M. A. Rau* 6171.

Embilica officinalis Gaertn.

In flower and fruit (Sept. 17, 1961, Mzp.). *Bhatt.* 17526.

Mallotus philippensis (Lamk.) Muell.-Arg.

Occasional, in flower (Dec. 12, 1961, Mzp.-Chopan). *Bhatt.* 18378.

Phyllanthus simplex Retz.

Common, in flower (Aug. 24, 1958; Feb. 10, Sept. 18, 1961, Mzp.-Agori, Kutwa, Vindhyachal). *M. A. Rau* 6142; *Bhatt.* 13628, 17568.

Sebastiania chamaelia Muell.-Arg.

In the forest undergrowth, fairly common, in flower (Aug. 24, 1958, Mzp.-Chopan). *M. A. Rau* 6189.

Securinega virosa (Roxb. ex Willd.) Pax & Hoff.

In flower and fruit (Aug. 23, 1958; Sept. 23, 1961, Mzp.-Agori, Bindam). *M. A. Rau* 6189; *Bhatt.* 17742.

MORACEAE

Ficus arnottiana Miq.

Occasional, in fruit (Dec. 7, 10, 1961, Mzp.-Tanda, Robertsgunge). *Bhatt.* 18338, 18472.

Ficus glomerata Roxb.

Fairly common in ravines, in fruit (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.* 13298.

F. retusa Linn.

Common in ravines, in fruit (Feb. 8, Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 13254, 18473.

F. tomentosa Roxb. ex Willd.

Abundant in ravines, in fruit (Feb. 9, Sept. 23, Dec. 10, 1961, Mzp.-Tanda, Bindam, Robertsgunge). *Bhatt.* 13296, 17743, 18335.

CERATOPHYLLACEAE

Ceratophyllum demersum Linn.

Common in ponds and reservoirs, in fruit (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17660.

MONOCOTYLEDONS

HYDROCHARITACEAE

Blyxa auberti Rich.

Submerged, occasional, in fruit (Sept. 23, 1961, Mzp.-Bindam). *Bhatt.* 18420.

Hydrilla verticillata Royle

Very common in ponds and water reservoirs, in flower (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.* 13610.

Nechamandra alternifolia (Roxb.) Thw.

Submerged, in flower (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17615.

Ottelia alismoides Pers.

Submerged, fairly common, in flower and fruit (Sept. 22, 1961, Mzp.-Marihan). *Bhatt.* 17739.

Vallisneria spiralis Linn.

Abundant in ponds, in flower (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13220.

ORCHIDACEAE

***Habenaria graveolens** Duthie

Fairly common, in flower (Aug. 25, 1958, Mzp.-Agori). *M. A. Rau* 6200.

Nervilea Sp.

Vegetative (Aug. 25, 1958, Mzp.-Agori). *M. A. Rau* 6208.

Vanda roxburghii R. Br.

On mango, fairly common, in flower (Dec. 12, 1961, Mzp.-Hathinala). *Bhatt.* 18373.

Zeuxine strateumatica (Linn.) Schltr.

Associated with *Imperata*, very common, in flower (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 12889.

AMARYLLIDACEAE

Crinum defixum Ker.

Growing in rocky stream bed, common, in flower (Sept. 21, 1961, Mzp.-Kutwa). *Bhatt.* 17678.

HYPOXIDACEAE

Curculigo orchiloides Gaertn.

Shady hill slopes, in flower (Aug. 24, 1958; Sept. 23, 1961, Mzp.-Agori, Bindam). *M. A. Rau* 6147; *Bhatt.* 17739.

DIOSCOREACEAE

Dioscorea bulbifera Linn.

Common, in flower (Sept. 21, 1961, Mzp.-Kutwa). *Bhatt.* 17670.

D. pentaphylla Linn. var. *linnaei* P. & B.

Occasional, in fruit (Sept. 22, 1961, Mzp. Robertsgunge). *Bhatt.* 17702.

LILIACEAE

Asphodelus tenuifolius Cav.

In cultivated fields, abundant, in flower and fruit (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13229.

Gloriosa superba Linn.

In bushes, common, in flower (Sept. 23, 1961, Mzp.-Kutwa). *Bhatt.* 17759.

SMILACACEAE

Smilax macrophylla Roxb.

Occasional, in flower (Aug. 24, 1958, Mzp.-Agori). *M. A. Rau* 6159.

PONTEDERIACEAE

Monochoria vaginalis (Burm. f.) Presl. ex Kunth

Aquatic, common in water margins, in flower (Sept. 19, 23, 1961, Mzp.-Tanda, Bindam). *Bhatt.* 17652, 17740.

COMMELINACEAE

Commelina benghalensis Linn.

In shady places, common, in flower (Sept. 18, 1961, Mzp.). *Bhatt.* 17594.

C. hasskarlii Cl.

In shady places near water, fairly common, in flower (Mzp.-Kutwa). *Bhatt.* 13660.

C. kurzii Cl.

In shady forest undergrowth; fairly common, in flower (Aug. 24, 1958, Mzp.-Agori). *M. A. Rau* 6157.

Commelina sp. (Probably a hybrid between *C. benghalensis* & *C. hasskarlii*).

In open Nullah, rare, in flower (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17729.

Cyanotis axillaris Schult. f.

Near water, common, in flower (Sept. 17, 1961, Mzp.). *Bhatt.* 17518.

C. cristata (Linn.) Schult. f.

In shady moist places, common, in flower (Aug. 24, 1958; Sept. 18, 1961, Mzp.-Agori, Vindhyachal). *M. A. Rau* 6138, *Bhatt.* 17574.

C. fasciculata Schult. f.

On shady sand stone rock, occasional, in flower (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17628.

Murdannia malabaricum (Linn.) Sant.

In shady places, common, in flower (Aug. 24, 1958, Sept. 17, 1961). *M. A. Rau* 6156, 6205; *Bhatt.* 17540.

JUNCACEAE

Juncus bufonius Linn.

Fairly common on moist river banks, in flower (Feb. 7, 11, 1961, Mzp.). *Bhatt.* 12865, 13681.

TYPHACEAE

Typha elephantina Roxb.

Aquatic, common, in flower (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.* 13292.

LEMNACEAE

Lemna paucicostata Hegelm.

In stagnant pools, common (Sept. 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17601.

Wolffia microscopica Kurz

Common in shallow pools (Sept. 17, 1961, Mzp.). *Bhatt.* 17548.

ALISMATACEAE

Sagittaria guayanensis H.B.K. ssp. *lappula* (D. Don) Bogin

Abundant in pools and flooded rice fields, in flower and fruit (Feb. 10, Sept. 18, 1961, Mzp.-Kutwa, Tanda). *Bhatt.* 13613, 17585-86.

BUTOMACEAE

Tenagocharis latifolia (D. Don) Buchen.

Aquatic, fairly common, in flower and fruit (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.* 13287.

APONOGETONACEAE

Aponogeton crispum Thunb.

Fairly common in ponds, in flower (Sept. 19, 22, 1961, Mzp.-Tanda, Robertsgunge). *Bhatt.* 17659, 17720.

A. natans (L.) Engl. & Krause.

Common in submerged rice fields, in flower (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17653.

POTAMOGETONACEAE

Potamogeton crispus Linn.

Common in slow streams and ponds, in flower (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.* 13608.

P. nodosus Poir.

Aquatic, common associate of *Typha*, in flower (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 12885.

P. pectinatus Linn.

In slow moving streams, abundant, in flower (Feb. 9, 1961, Mzp.). *Bhatt.* 13611.

NAJADACEAE

Najas graminea Del.

Fairly common in shallow water, in flower (Sept. 18, 19, 1961, Mzp.-Vindhyachal, Tanda). *Bhatt.* 17600, 17661.

ERIOCAULACEAE

Eriocaulon quinqueangulare Linn.

In moist rice fields, common, in flower (Sept. 22, 23, Dec. 9, 1961, Mzp.-Robertsgunge; Bindam, Sirsi). *Bhatt.* 17709, 17744, 18310.

E. cinereum R. Br.

Fairly common in marshy areas, in flower (Feb. 10, 1961, Mzp.-Tanda). *Bhatt.* 13659.

E. setaceum Linn.

In stagnant pools, associated with *Spirogyra* sp., rare, in flower (Sept. 23, 1961, Mzp.-Bindam). *Bhatt.* 17763.

E. trilobum Buch.-Ham. ex Hoern.

Occasional in marshy places, in flower (Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 18479.

CYPERACEAE

Courtoisia cyperoides Nees

On moist ground, fairly common (Feb. 9, Dec. 9, 1961, Mzp.-Tanda, Sirsi). *Bhatt.* 13286, 18308.

Cyperus corymbosus Rottb.

Common (Aug. 24, 1958, Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17626.

C. difformis Linn.

Common (Sept. 18, 21, Dec. 7, 1961, Mzp.-Vindhyachal, Kutwa). *Bhatt.* 17593, 17676, 18468.

C. dilutus Vahl

Aquatic, common (Sept. 21, 1961, Mzp.-Kutwa). *Bhatt.* 17674.

C. exaltatus Retz.

In rice fields, common (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17657.

C. flavidus Retz.

Aquatic, occasional (Sept. 21, 1961, Mzp.-Kutwa). *Bhatt.* 17675.

C. globosus Allion.

On marshy ground, common (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13263.

C. iria Linn.

Common in moist areas (Aug. 23, 24, 1958, Sept. 19, 1961, Mzp.-Agori, Tanda). *M. A. Rau* 6131, 6182; *Bhatt.* 17592.

C. pangorei Rottb.

On marshy ground, fairly common (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 1290.

C. pumilus Linn.

On moist ground, fairly common (Sept. 17, 1961, Mzp.). *Bhatt.* 17537.

C. triceps (Rottb.) Endl.

Common (Aug. 23, 1958; Sept. 19, 1961, Mzp.-Chopan, Tanda). *M. A. Rau* 6184; *Bhatt.* 17648.

Eleocharis atropurpurea Kunth.

In moist areas, common (Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 18465.

E. capitata R. Br.

Fairly common (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 12896.

E. palustris (Linn.) R. Br.

Common in marshy places (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13231.

Fimbristylis dichotoma (Linn.) Vahl

Common (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13228.

F. tetragona R. Br.

Common in marshy places (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13245.

F. miliacea Vahl

Common in marshy ground (Sept. 17, 1961, Mzp.). *Bhatt.* 17516.

F. schoenoides Vahl

Common in marshy places (Sept. 17, 19, 1961, Mzp.-Tanda). *Bhatt.* 17534, 17647.

Fuirena ciliaris (Linn.) Roxb.

Marshy herb (Dec. 7, 9, 1961, Mzp.-Tanda, Sirsi). *Bhatt.* 18319, 18469.

Scirpus articulatus Linn.

Aquatic, common (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13222.

S. erectus Poir.

Aquatic, occasional (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17708.

S. supinus Linn.

Aquatic, common (Feb. 8, Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 12897, 18500.

GRAMINEAE

Alloteropsis cimicina (Linn.) Stapf

On dry hill slopes, common (Sept. 20, 1961, Mzp.-Kutwa). *Bhatt.* 17668.

Apluda mutica Linn.

On bushes, common (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13652.

Aristida adscensionis Linn.

On walls of buildings, common (Sept. 13, 1961, Mzp.). *Bhatt.* 17505.

A. funiculata Trin. et Rupr. var. **funiculata** Bor.

On dry hills, common (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17624.

Bothriochloa intermedia Camus var. **punctata**

Common in forest (Dec. 11, 1961, Mzp.-Hathinala). *Bhatt.* 18352.

B. pertusa (Linn.) A. Camus

In bushes, common (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13619.

Brachiaria ramosa Linn. Stapf

Common (Aug. 24, 1958, Mzp.-Agori). *M. A. Rau*, 6141.

Chloris barbata Sw.

On old walls, common (Sept. 17, 1961, Mzp.). *Bhatt.* 17506.

C. dolichostachya Lagasca

In bushes, common (Feb. 9, Dec. 6, 1961, Mzp.-Tanda, Vindhyachal). *Bhatt.* 13293, 18456.

Chrysopogon fulvus (Spreng.) Chior.

Common (Sept. 18, 1961, Mzp.-Vindhyachal). *Bhatt.* 17572.

C. lancearius (Hook. f.) Haines

On shady hill slopes, fairly common (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.*

Coix gigantea Koenig. ex Roxb.

In stream banks, rare (Sept. 21, 1961, Mzp.-Kutwa). *Bhatt.* 17681.

Dactyloctenium aegyptiacum (L.) P. Beauv.

On moist grassy hill slope, fairly common (Sept. 21, 1961, Mzp.-Kutwa) *Bhatt.* 17694.

Dendrocalamus strictus Nees

Abundant (Dec. 6, 1961, Mzp.-Vindhyachal). *Bhatt.* 18459.

Desmostachya bipinnata (Linn.) Stapf

Fairly common on dry fallow fields (Aug. 23, 1958, Mzp.-Agori). *M. A. Rau* 6168.

Dichanthium annulatum (Forsk.) Stapf

On waste fields and hill slopes, common (Feb. 7, 8, Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 12856, 13262, 17617.

D. caricosum (Linn.) A. Camus

On dry river banks, common (Feb. 7, 10, 1961, Mzp.-Kutwa). *Bhatt.* 12857, 13640.

Digitaria sanguinalis (Linn.) Scop.

On bushes, common (Aug. 24, 1958, Sept. 17, 1961, Mzp.-Agori). *M. A. Rau* 6178; *Bhatt.* 17504.

Echinochloa colonum (Linn.) Link

In shady waste places, common (Feb. 10, 1961, Mzp.).

E. crus-galli (L.) P. Beauv.

On moist ground or near water, fairly common (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.* 13601.

Eleusine indica (Linn.) Gaertn.

In waste places, common (Sept. 17, 1961, Mzp.). *Bhatt.* 17543.

Eragrostis diplotachnoides Steud.

Common (Feb. 8, Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 13219, 18496.

E. gangetica (Roxb.) Steud.

On moist ground, common (Dec. 7, 9, 1961, Mzp.-Tanda, Sirsi). *Bhatt.* 18338, 18480.

E. Japonica (Thunb.) Trin.

On moist rocks near stream, occasional (Dec. 9, 1961, Mzp.-Sirsi). *Bhatt.* 18305.

E. nutans (Retz.) Nees ex Steud.

Common on dry hill slopes (Sept. 19, Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 17632, 17649, 18462.

E. tenella (Linn.) P. Beauv. ex Roem. et Schult. var. **insularis** Hubb.

On dry soil, usually on roadside, common (Dec. 9, 1961, Mzp.-Sirsi). *Bhatt.* 18309.

E. unioloides (Retz.) Nees ex Steud.

On moist ground, common (Sept. 19, Dec. 9, 1961, Mzp.-Tanda, Sirsi). *Bhatt.* 17644, 18316.

E. tenella (Linn.) P. Beauv. ex Roem. et Schult.

On dry soil, common (Feb. 10, 1961, Mzp.). *Bhatt.* 13691.

Eremopogon foveolatus (Del.) Stapf

On dry plateau, fairly common (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17624.

Hackelochloa granularis (Linn.) O. Ktze.

On dry hill slopes, common (Sept. 18, 1961, Mzp.-Vindhyachal). *Bhatt.*

Heteropogon contortus (Linn.) P. Beauv. ex Roem

Common in forest undergrowth and on dry hill slopes (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17614.

Ischaemum rugosum Salisb.

Near water, common (Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 18461.

Oryza rufipogon Griff.

Along the margins of water, common (Sept. 19, 1961, Mzp.-Tanda). *Bhatt.* 17656.

Panicum austroasiaticum Ohwi.

On rocky stream banks, occasional (Dec. 7, 1961, Mzp.-Tanda). *Bhatt.* 18464.

P. paludosum Roxb.

Near water, fairly common (Feb. 9, 1961, Mzp.-Tanda). *Bhatt.* 13285.

Paspalidium flavidum (Retz.) A. Camus

Aquatic, common (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13631.

Paspalum orbiculare Forst.

In cultivated field (Sept. 23, 1961, Mzp.-Kutwa).

Pennisetum pedicellatum Trin.

Common (Feb. 10, Dec. 9, 1961, Mzp.-Kutwa, Sirsi). *Bhatt.* 13655, 18307.

Polypogon monspeliensis (Linn.) Desf.

Common on the river banks (Feb. 8, 11, 1961, Mzp.-Tanda). *Bhatt.* 13276, 13687.

Schoenefeldia gracilis Kunth.

In forest undergrowth, common (Sept. 21, 1961, Mzp.-Kutwa). *Bhatt.* 17695.

Setaria glauca (Linn.) Beauv.

In waste cultivated fields, common (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13621.

Themeda quadrivalvis (Linn.) O. Kze.

Abundant in forest undergrowth (Feb. 10, 1961, Mzp.-Kutwa). *Bhatt.* 13642.

T. laxa (Anders.) A. Camus

On moist ground, very common (Feb. 8, 1961, Mzp.-Tanda). *Bhatt.* 13223.

Vetiveria zizanioides (Linn.) Nash.

In moist soil or near water margin, common (Sept. 19, Dec. 9, 1961, Mzp.-Tanda, Sirsi). *Bhatt.* 17650.

PTERIDOPHYTES

Adiantum caudatum Linn.

On shady sandstone hills, common (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17715.

Actiniopteris australis Link

Common on old walls and on sandstone hills (Feb. 8, Sept. 17, 1961, Mzp.-Tanda). *Bhatt.* 13242, 17535.

Selaginella bryopteris (Linn.) Baker

Abundant on dry sandy hill tops (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17736.

S. repanda (Desv.) Spreng.

In shady rock fissures, common (Sept. 22, 1961, Mzp.-Robertsgunge). *Bhatt.* 17737.

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LITERATURE CITED

- BHATTACHARYYA, U. C. A contribution to the flora of Mirzapur-I. Some new records for the district and for the Upper Gangetic Plain. *Bull. bot. Surv. India* 5(1) : 59-62, 1963.
- SRIVASTAVA, J. G. A note on the flora of Mirzapur (U. P.). *J. Bombay nat. Hist. Soc.* 53 : 152-153, 1955.
- WADIA, D. N. *Geology of India*. London, 1957.