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Indian Timbers.
The Hill Forests of Western India.

BY

HERBERT MILLS BIRDWOOD, C.S.I., L.L.D., M.A.

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FOREIGN CARRIAGE, DUTY AND ASSURANCE WHILE IN TRANSIT AT PURCHASERS' EXPENSE.

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The particular area of which I spoke at the beginning of this paper is within easy reach of the City of Bombay. It includes hilly tracts of country on either side of the range of the Western Ghats, in the Dekhan and Konkan respectively, between the latitudes, roughly speaking, of Bombay and Satara. As compared with other forest areas elsewhere in the Presidency, it is by no means remarkable, so far as the production of valuable timber is concerned; but it is of interest as illustrating generally the methods of the Forest Department; and it is of special interest to the inhabitants of Bombay and many other cities in the plains, as it includes the two popular hill stations of Matheran and Mahableshwar, where one much of their value as health resorts to their pleasant woods and abounding undergrowth of beautiful shrubs and flowering plants and feneas, which everywhere keep the ground cool and the air sweet and fresh. Both in climate and splendour of wild woodland scenery they furnish an instructive contrast with those hills of the same tract which have suffered from the destruction of forests in the manner I have already described. An account of the forest flora of Matheran and Mahableshwar will apply generally to similarly preserved portions of the Western Ghats, and the adjoining regions; and, in the time that is left us, it will be sufficient, perhaps, if I dwell only with the flora of these two hills. Their vegetation is not indeed identical. Dr. Theodore Cooke, formerly principal of the College of Science at Poona, and an accomplished botanist, who always found his "pleasure in the pathless woods" whenever he could escape from college lectures, has estimated that, exclusive of grasses, about 140 flowering plants are found at Matheran which have not been seen at Mahableshwar, and 130 at Mahableshwar which have not been seen at Matheran. Some of the conditions which regulate the distribution of plants are not indeed equally operative at both places. Mahableshwar is about seventy miles nearer the equator than Matheran. The latter is an isolated hill rising from the plain of the Konkan, midway between the Ghats and the sea; whereas Mahableshwar is further from the sea, and is, to all intents, a part of the range of Ghats. The highest point of Matheran is about 3,500 feet above the sea-level, whereas the Mahableshwar plateau is at a general elevation of 4,500 feet above the sea, and rises at one point to 4,700 feet. These differing conditions are not without effect. Some plants are found at Mahableshwar which will not thrive on the lower mountain top. Some Matheran plants, on the other hand, find the higher levels of Mahableshwar beyond their range. I will give a few instances. The most casual observer is struck by the wonderful undergrowth of brake-fern at Mahableshwar, and of the arrow-root plant—which in October and November blooms on almost every square yard of the jungle—and by the beautiful profusion of the Osmunda fern, mixed with clustering roses and willows, along the upper stream of the Yenna river. At Matheran the brake-fern is scarcely known. In a few years it will be extinct, if it is not already so; for being rare it has been the prey of thoughtless fern-hunters and cannot defy their onslaughts. It would be impossible for any number of fern-hunters to destroy it at Mahableshwar, and so it is left alone. Even if un molested at Matheran it drags on at best but a feeble existence. The site is too low for it, the lowest limit of its range in the latitude of Bombay being apparently a little more than 2,000 feet above the sea-level. The Osmunda, again, is not known at Matheran, nor is the Willow (Salix tetrasperma), nor the Arrow-root (Hitchensia stellaris), though other allied plants of the order Scitaminaceae are plentiful enough. On the other hand, there are some well-known Matheran trees, such as the Kumbha (Carapa arborescens), the Mahal or Indian ebony (Diospyros melanoxylon), and the Chicioda (Metroxylon Roxburghii), which do not grow on the Mahableshwar plateau at all. But after full account is taken of all divergences, it is found that many plants are common to the two hills. Such a coincidence is favoured by the practical identity of their geological formation, and by the circumstance that there is no great difference in the range of their mean temperatures at different seasons and in their rainfall. Both Mahableshwar and Matheran are huge masses of rock, capped by a thin layer of basalt. Both are within sight of the sea. Both are swept by the same dry winds in the cool weather, and by the same monsoon storms, and both enjoy the full benefit of the monsoon rains. The average thermometer readings at Mahableshwar from 63° Fahr. to 71.7°, and from 67° to 73.5° at Matheran. The mean temperature of Mahableshwar amounts to 68° 4 inches, and at Matheran to 224.7 inches. Under such
...correspondent influences it is not surprising that a marked similarity should be apparent in the general outward forms of vegetation on the two hills, due to the frequent presence of the same characteristic plants on both. Everywhere at Mahabaleshwar, as at Matheran, we find the Myrtle tribe represented by endless woods of the beautiful Jambul tree (Eugenia Jambolana), the Melastomataceae by the Anjan or Ironwood (Memecylon edule), the Laurales by the Pusa (Litsea Stockii), and the Madder tribe by the thorny Gela (Randia dametorum)—a small tree, generally a shrub, with numerous stiff branches, armed with spines, and large fragrant white flowers, which turn yellow before they fade. There is the same undergrowth of shrubs and herbaceous plants, the natural orders of Leguminosae, Anacardiaceae, and Compositae being specially and numerously represented. There are many showy climbers, trailers, and creepers, and Orchids and Dendrobiums common to both hills, while everywhere the little silver fern covers with equal impartiality every sheltered bank and rock. Some years ago, before leaving India, I prepared for the "Bombay Natural History Society's Journal," with the aid of several competent botanists, a catalogue of the flora of Matheran and Mahabaleshwar. I cannot pretend that it is a complete list, for the simple reason that during the four rainy months of the year, when most herbaceous plants are at their best, the hills are practically inaccessible to Europeans; but in addition to the hill flora it includes some of the more conspicuous plants on the higher levels of the road from Poona to Mahabaleshwar; and the list of forest trees, which are conspicuous at all times, may perhaps be accepted as complete. It may interest you to know that of the 733 names included in the catalogue, about 125 are the names of trees or sub-trees, as distinguished from shrubs, creepers, grasses, ferns, and undergrowth generally. Of the trees probably not more than ten species have been introduced, and about 115 species are probably indigenous. They constitute but a small proportion of the indigenous trees found throughout India, the number of which exceeds 20,000 species, but they give some idea of the diversity of forest vegetation in the limited area under consideration, if we bear in mind that the number of species of indigenous trees in Great Britain is only forty.*

The trees which have been distinctly introduced are the Peach, which is cultivated at the hill station of Panchgani, near Mahabaleshwar; the Stringy Bark (Eucalyptus obliqua), which does not take kindly to Mahabaleshwar, the rainfall there being evidently too heavy for it, but does better at Panchgani—which, at a distance of only ten miles from Mahabaleshwar, has a much lower rainfall—though not nearly so well as on the Nilgiri Hills; the Cinekoma saccifera, which again has not been a success, as on the Nilgiri Hills and elsewhere; the Cassowary tree or Beefwood (Casuarina equisetifolia), which has been extensively planted at Panchgani, but much prefers the lower lands nearer the sea, and especially the sandy beaches of the Konkan coast; the Oak (Quercus robur), of which, however, there are very few well-grown trees; and the Mulberry (Morus alba), which was probably brought from China.

Among the more important or more conspicuous trees which may be regarded as indigenous are two species of Garcinia—the wild Mangosteen (Garcinia indica) and the Gunboje tree (Garcinia wallichiana), conspicuous by its large, peach-shaped fruit, covered with scarlet down; the Silk-cotton tree (Bombax malabaricum), which attains a great size, and is a tree of strange beauty when in full bloom, with its large, showy, rose-red flowers; the Kāśu (Erythrocarpus obliquus), with leaves turning red in autumn, and clusters of flowers with white-fringed petals and reddish-brown sepals; the Frankincense tree (Boswellia serrata), which is plentiful on the Ghāt road between Poona and Mahabaleshwar; and another balsamiferous tree, the Canarium strictum, yielding a gum, burnt as incense by the hill people at their religious services, and much sought after on account of the rarity of the tree, of which I have found only one specimen at Matheran, to my lasting wonder at its presence there, in a thick wood, far from its congeners, and hemmed in by countless aliens; the Garcina pinnata (belonging also to the same natural order Burseraceae), the bark of which is used in tanning; the Indian Satin-wood (Chloroxylon Swietenii), an excellent wood for cabinet work of the better kind; the Indian Red-wood or Bastard Cedar (Sapium febrifugum), the bitter bark of which is used as a substitute for cinchona bark; two species of the Jujube tree (Zizyphus); the Koshimb tree (Scheelea trijuga), on the young branches of which he is produced in many parts of India; the well-known Mango tree (Mangifera indica), which is found wild on many hills, though sometimes said to have been introduced by the Portuguese monks from Brazil; the "Flame of the Forest" (Butea frondosa), which has given its name—"Fāla"—in the vernacular—to the memorable plain of Palakāsi, commonly known as Phalsari; the Blackwood tree (Dalbergia latifolia), of which is made the elaborately-carved furniture, which at one time was much prized in Bombay; the beautiful Indian laburnum (Cassia fistula); the Aracna Siana, from the wood of which Catechu is manufactured; and yet another beautiful representative of the order Leguminosae, the Laeli (Albizia stipulata), a very conspicuous tree at Matheran, with clean stem and spreading branches, finely pinnate leaves, and large acacia-like flowers, with numerous white, lilac-tipped stamens; the Ain (Terminalia tomentosa), a valuable timber tree; the Myrobolam tree (Terminalia chebula), which is found in great abundance on Mahabaleshwar, the fruit—the Chebulic Myrobalan of commerce—being largely exported, coming indeed, for the whole

51.—*Chloroxylon Swietenia* D.C. Satinwood or Hurugalu. A moderate-sized deciduous tree, found in Central and South India, also in Ceylon. Wood very hard, yellowish-brown, (the inner wood of a darker colour), with a beautiful satiny lustre. It is used for agricultural implements, cart building, furniture, picture frames, turning, and cabinet making; and is found to stand well under water. Weight, about 62 lbs. per cubic ft.


- Used for ships, boats, building, carts; in Ceylon for casks. Main timber of E. Bengal, Chittagong, Burma, but becoming scarce. GAMBLE.

55. *Lagerstroemia lanceolata*: Boda or Bentack,

(For description see plate 56.)
6a. *Pterocarpus Marsupium, Roxb.* (Honné.) A large deciduous tree, common in Mysore and Shimoga forests. Wood very hard, close grained; tough and strong, heartwood yellowish brown with darker streaks. This wood is durable, seasons well, and takes a fine polish. It is much used for door and window frames, posts and beams, cart and boat building. From wounds in the bark it yields a red gum resin called “Kino,” much used in medicine. The average weight is about 48 lbs. per cubic foot. [Mysore Catalogue.]
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