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## DISTRIBUTION OF PLANTS IN BRITISH EAST AFRICA

BY E. BATTISCOMBE.

In a country such as this where there are lands stretching away from the coast up to the line of perpetual snow, and all subject to the rays of the equatorial sun, the floral distribution must, of necessity, form a very interesting study.

In order to give a small idea of the wonderful variety of flowering plants to be met with in the Protectorate it may

serve the purpose to record some of the more common plants to be seen from the train when travelling on the Uganda Railway between Naivasha and the coast.

It must not be supposed, however, that the plants mentioned in this article can all be seen in flower at any one particular time of the year.

The altitudes given for the stations have been kindly supplied by Mr. A. E. Church of the Uganda Railway.

Leaving Naivasha, 6354 feet, the line begins to ascend the Kikuyu Escarpment out of the Rift Valley.

The typical vegetation of the Rift Valley is seen here, wind-worn bushes or small trees of *Capparis*; *Tarconanthus camphoratus* (Masai = Ol-leleshwa); *Carissa edulis*, and here and there an old Olive (*Olea chrysophylla*). Near the lake may be seen flat-topped Acacias, so characteristic of the African landscape anywhere near water. Growing in the grass are many *Crinums* which, just before the rains commence, put out their beautiful white and pink flowers; other plants to be seen are species of *Helichrysum*, *Heliotropa*, *Coleus*, *Lantana*, *Buddleia*, and forming conspicuous patches of white and pink in the grass, *Ramphicarpa heuglinii*.

After passing Mount Longonot the *Capparis* trees disappear and are not met with again along the line.

Close to Kijabe, 6909 feet, small *Juniperus procera* trees may be seen growing at the foot of Kijabe peak. After leaving Kijabe the line continues to ascend steadily; for a mile or so *Tarconanthus* bushes continue, but when the forest is reached they cease and do not appear again.

Between Kijabe and the commencement of the forest may be seen in July splendid specimens of the white *Pentas*. In the forest may be seen the giant Junipers (*Juniperus procera*) in all their grandeur; many of them having boles free of all branches for sixty feet; alas that appearances are sometimes deceptive! For when these trees are felled the majority of them prove to be but mere hollow shells, the heartwood having all been eaten away by a fungus, probably a species of *Trametes*.

Associated with the Juniper are the following trees: *Calodendron capense* (Cape Chestnut); *Warburgia ugandensis* (Muziga), whose characteristic bark has been aptly described

as like the hide of an elephant; *Toddallia lanceolata*; *Olea chrysophylla* (Mutamayu); *Olea hochstetteri* (Musharage); *Nuxia congesta* (Muchorowé). Several species of *Plectranthus* form the carpet of the forest; along the line flourish species of *Pentas*, *Celsia*, *Helianthus*, *Myosotis*, *Achrocline*, *Thunbergia*. *Warburgia* trees cease before Escarpment station is reached, and only reappear again about three miles from Limoru. As soon as the summit of the Kikuyu Escarpment, about 8000 feet, is reached, a marked change in the vegetation takes place occasioned by the increased rainfall. The eastern side of the Escarpment being exposed to the South-east winds receives a very much heavier rainfall than the western side. Juniper ceases at the summit and is replaced by *Podocarpus milanjanus*; *Calodendron*, *Olea chrysophylla*, and *Nuxia* also disappear, but are replaced by a host of other trees—*Pygeum africanum* (Mueri); *Allophyllum abyssinicum* (Mushami); *Weihea africana* (Musaizi); *Mcaranga* sp. (Mutundu); *Heptapleurum* sp. (Mutati); *Dombeya nairobiensis* (Mukao); *Elaeodendron* sp. (Mutanga). *Nuxia congesta* reappears again at Limoru, 7463 feet, and flourishes as low down as 6000 feet, when it ceases.

After passing the summit, the line skirts the Lari swamp, which at certain seasons presents a fine piece of colour with the yellow and red-hot pokers *Knifhofias* (*K. Thompsonii*). On the drier ground above the swamp *Thunbergia alata* flourishes and is very conspicuous with its large golden-yellow blooms. Across the swamp can be seen groups of Bamboo (*Arundinaria alpina*), and a fleeting vision of the tree ferns may be had; after passing the swamp the line again passes through forest, but of a very much more luxuriant type than that on the other side of the Escarpment.

The wild bananas (*Musa Livingstonia*) show out in bold relief to the comparatively small-leaved trees of the forest, the shining Magnolia-like leaves of *Tabernaemontana abyssinica* (Muwele) are also conspicuous.

Along the side of the track may be seen *Viola abyssinica*; *Myosotis abyssinica*; *Glycine javanica*; *Thalictrum rhynchocarpum*; *Sparmannia abyssinica*; *Thunbergia alata*; bright blue *Plectranthus*; blue *Commelina*, and here and there is a

tall *Lobelia Johnsonii*, which is here seen at its lowest limit ; *Celsius* grows on the sides of the cuttings wherever it can get root-hold ; in the grass, but not easy to be seen from a passing train, are many small blue Lobelias.

At Limoru, 7463 feet, there is a conspicuous *Crotalaria* which grows into a small tree ; it produces long racemes of large yellowish green flowers, it is named by the Kikuyu 'Mwethia.' Between Limoru and Kikuyu there is a drop of 645 feet and the flora does not exhibit much change between these two stations. *Nuxia congesta* and *Olea chrysophylla* become abundant again, and also *Olea hochstetteri* and *Warburgia ugandensis*. Wherever the land, formerly cultivated, has been allowed to lie fallow it is covered with *Abutilon bidentatum* and *Bidens pilosa* : this latter is an exotic, its real home being in the West Indies, but is now a noxious weed and known as *Spanish needles*. From the West Indies we have received two unwelcome guests who flourish on the country's hospitality—the *Chigger* and *Spanish needle*. Associated with the *Abutilon* is a purple *Vernonia*.

Another noxious plant begins to make its appearance in ever-increasing quantities as the line descends, which is the *Solanum campylacanthum* ; this plant may be said to have a wider distribution than any other plant in the Protectorate ; it is easily recognised by its branching habit of growth, paucity of leaves, and its yellow fruit, somewhat resembling in size and shape a crab-apple.

After leaving Kikuyu Station the line descends rapidly to Nairobi, 5575 feet ; between these two stations the country gradually becomes drier and there is a marked change in the flora. Soon after leaving Kikuyu the characteristic light-crowned trees of the *Croton elliotianus* (Mukinduri) are seen standing well above the other trees ; this tree extends as far as Nairobi, but is rarely found at a lower altitude. When close to Nairobi another tree which once seen can never be mistaken for any other is the *Muhugu*, a species of *Brachyleima* ; the tree has a very thin crown confined to the upper third of the stem and not spreading. The species is a new one and has not yet been named ; it is a dioecious tree.

What at first sight, or in the distance, may be taken for

a fine umbrageous tree is a parasitic fig which grows on the *Muhugu* and other trees, gradually enveloping them; this fig is closely allied to *Ficus capensis*; it is a conspicuous feature in the landscape between Limoru and Nairobi. The following trees and plants may be seen along the line between Kikuyu and Nairobi: *Abutilon bidentatum*, *Solanum campylacanthum*; *Leonotis elliotii*; *Emilia sagittata*; *Vernonia* sp.; *Cassia didimobotrya*—very conspicuous along the Nairobi River; *Achrocline Hochstetteri*; *Pentas lanceolata*; bracken fern; *Dracaena reflexa*; *Heliotropium strigorum*; *Thunbergia alata*; *Gerbera abyssinica*; *Schrebera alata*; *Lantana salvifolia*; *Lippia* sp.; *Ocimum* spp.; *Coleus* sp.; *Buddleia salvifolia*; *Rhamphicarpa heuglinii*; *Helianthus* sp.; *Jasminum abyssinicum*; *Grewia columnaris*; *Pentanisia ouranogyne*; *Eugenia cordata*; *Triumfetta ruwenzoriensis*; *Albizzia fastigiata*; *Impatiens* sp.; *Dombeya nairobiensis*; *Maba abyssinica*; *Nesaea* sp.; *Acidanthera candida*; *Clerodendron myricoides*; *Dolichandrone Hildebrandtii*.

Nairobi forms a well-defined boundary between two distinct zones of vegetation which may be described as tropical and extra-tropical. On the western side there are the hills with a rich variety of luxuriant vegetation, on the eastern the dry, treeless plains, which are green only for two short seasons in each year.

Immediately on leaving Nairobi the line passes on to the plains, on which—except in the rainy season—there is scarcely a speck of colour to relieve the general monotony of dry grass. Our old friend *Solanum campylacanthum* flourishes along the side of the track, and also *Thunbergia alata*. In June and July the little *Pentanisia ouranogyne* makes pleasing patches of bright blue; in the rains can be seen here and there the beautiful white flowers of *Acidanthera candida*.

From Nairobi the line descends to Athi River Station (4948 feet). At the bridge over the river may be seen the flat-topped acacias growing close to the water, and the course of the river is indicated for a long distance by these trees. After crossing the stony Athi the line passes the famous reed beds (famous from a sportsman's point of view) in which papyrus and bulrushes flourish. Between Athi River Station

and Machakos Road there is little variety in the vegetation from the black cotton of the plains, but at the latter station the soil changes to a rich red loam, with the result that trees are abundant, though they are only small ones.

From Machakos Road Station the line descends rapidly to Kiu (4861 feet). Just before coming into Kiu Station the beautiful mauve and white *Astrochlaena* can be seen on the right-hand side of the line; this *Astrochlaena* has a distribution extending to Voi. Leaving Kiu, on each side of the line at certain seasons of the year may be seen the small bushes of *Thunbergia erecta*, with their gorgeous purple flowers. About half-way between Kiu and Sultan Hamud the line cuts through a group of acacias with fine red bark; seen when the sun is low, so that his rays strike direct on to the stems of the trees, the colour is very beautiful.

From here on to Makindu the country is, from a botanist's point of view, rather monotonous and does not exhibit much change. There is an interesting landmark just outside Simba Station (3345 feet) in the shape of a solitary baobab tree (*Adansonia digitata*), indicating its farthest limit of altitude and also indicating that the real tropics have commenced. In the station garden there are two exotic trees which are interesting as noting the altitude at which they can flourish, they are *Moringa pterygosperma* and *Plumieria rubra*, commonly known as Frangipane.

Between this station and Kibwezi the white *Plumbago zeylanica* grows in great abundance along the line, and beyond Makindu the very beautiful *Caesalpinia elata*; this tree is found also at Voi.

The part of the line between Kibwezi and Voi is a closed book to the writer of this article, as both the up and down mixed trains pass along it in the night.

From Voi (1833 feet) a conspicuous feature on each side of the line are the many *Sanseveira* plants, chiefly *S. guiniensis* and *S. ehrenbergii*.

The line passes through fairly thick bush, the trees composing it having marked xerophytic characters. Conspicuous among the trees are large *Euphorbia candelabra* and the bright red-flowered *Erythrina*.

After crossing the Voi river the line traverses the waterless district known as the Taru desert, which extends practically as far as Samburu (914 feet). From here towards the coast the climate comes under the influence of the ocean, and in consequence becomes more and more green and fertile as the sea is approached.

Small bushes of the *Adenium coetaneum* make themselves conspicuous along the line by their thick succulent stems resembling miniature baobab trees and their bright red azalea-like flowers; fine specimens of a cycad, *Encephalartos sp.*, can be seen at intervals between Samburu and Maji ya Chumvi; the large yellow *Hibiscus* and a white *Pentas* are conspicuous, and also very common is the *Solanum campylacanthum*. About half-way between Maji ya Chumvi and Mazeras stations the branching Dom palms are first seen, and they rapidly become the principal feature in the landscape; associated with them are the small trees of *Dalbergia melanoxylon* (ebony), *Bauhinia reticulata*, and the wild custard apple, *Anona senegalensis*. As Mazeras is approached a fine *Borassus aethiopicum* may be seen some way to the left of the line, with its characteristic bottle-shaped stem. Coconut palms now begin to appear, and by the time Mazeras Station is reached they are very abundant. Between Mazeras (534 feet) and Mombasa practically little variation takes place in the flora. Along the line may be seen *Oldenlandia abyssinica*, with its small bright red flowers appearing above the grass; *Heinsia densiflora*, with its pure white flowers, *Hibiscus sp.*, *Thespesia populnea*; in pools the blue *Nymphaea lotus*; on many of the Dom palms the fine yellow and brown *Orchis Ansellia*. Of trees, *Azelia cuanzensis* (Mbembaköfe); *Dalbergia melanoxylon* (ebony); *Bauhinia reticulata*; *Anona senegalensis*; *Syzygium jambolana* (Msambarao); *Tamarindus indica*, which is here indigenous; *Artocarpus integrifolia*; *Anacardium occidentale*; *Zizyphus jujuba* (Mkunasi); *Mangifera indica*, are conspicuous.

On crossing the Makupa bridge mangrove trees, growing in all their luxury, may be noted; the chief species to be seen are *Rhizophora mucronata*, *Brugueira gymnorhiza*, and *Avicennia officinalis*.

In this article only those trees and plants which are conspicuous by their flowers, leaves, or habit of growth have been mentioned, and no account has been taken of cultivated plants with the one exception of those two mentioned as growing at Simba Station. To mention all the trees and plants to be seen near the railway would require a very large volume. The object of the writer has been to try to show the large variety of plants and trees which may be seen by any observant person when travelling on the Uganda Railway.

From the bamboos of the Kikuyu escarpment to the mangrove swamps of the coast, with all the enormous variety of plants and conditions of climate between, is a far cry, and yet it can all be seen within twenty-four hours!

Specific names have only been given in cases where specimens have been identified at the Royal Botanical Gardens, Kew, or have been identified in the 'Flora of Tropical Africa,' or Engler's 'Flora of German East Africa.'

[The *Solanum campylacanthum* mentioned several times in the article is one of the best known plants in East Africa both to natives and Europeans; it is generally about two to three feet high and bears a conspicuous yellow tomato-like fruit about seven-eighths inch in diameter. This fruit plays a part in native ceremonial among the Nandi, Kamasia, Bantu Kavirondo, and A-Kamba, and its influence is generally believed to avert evil or promote peace. The Swahili name is 'Tunguja,' and this name is derived from 'Tungu,' which means a whitlow, because it is believed that a poultice made of the fresh fruit will reduce the swelling and alleviate the pain.—EDITOR. C. W. H.]

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## SOME EAST AFRICAN BUTTERFLIES

BY REV. K. ST. AUBYN ROGERS, M.A.

East Africa, from the standpoint of zoology, belongs to the Ethiopian region, which comprises all Africa south of the Sahara, together with a part of Southern Arabia. This region is very distinct, and the number of butterflies, at any rate which range beyond its borders, is very small, whilst whole sections