

## Evolution of the Grasses x)

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Because the flowers of grasses are so reduced, botanists in past have relied mostly on vegetative characters, such as the spikelets and their disposition in the inflorescence, to classify the family. Hackel, in his treatment of the Gramineae in *Die Naturlichen pflanzen familien* (late 1800's proposed 12 tribes based on these characteristics and regarded the tribe. *famousene* as the most advanced. Recent investigation however, have revealed the unnaturalness of Hackel's system. Results from studies features as leaf anatomy and epidermis, cytology, embryology and floral Morphology have corroborated to show that the grass family consists of about six natural groups which perhaps should be regarded as sub families. These groups are the bambusoid, festucoid, panicoid, chloridoid (or eragrostoid), centothecoid and arundinoid. It is now felt that the bambusoid group is the most primitive and from this stock have been derived the remaining groups.

The author has been investigating the *olyrear*, a tribe of bambusoid grasses which occur in the tropical

American rain forests. He feels that bamboos of tropical Asia were the progenitors of present-day grasses. From this original stock evolved herbaceous bambusoid grasses which invaded the forest. Remnants of this ancient stock, with Hermaphrodite flowers, persist in New Guinea (Buergeria) and tropical Africa (atratocarpa, Puelia), from the common line of which probably evolved the American tribes Olyreae and Parianeae, whose members are more advanced in that they are monoecious. Along a separate line evolved the bambusoid tribe Phytreae, whose members are also monoecious and include two genera, Leptaspis of the Old world tropics and Pharus of the New World tropics.

In response to the earth's changing habitats, such as the cold temperate and arid environments, the ancient bambusoid stock evolved radically into other distinct groups. The panicoid and centothecoid groups are mostly tropical, the chloridoid mostly arid-region grasses, the festucoid cool-climate grasses, and the arundinoid mostly reed grasses of open habitats in both the tropical and temperate regions.

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