

HIBISCUS

Vessels small or medium-sized, moderately small (50-100 μ) in some spp. larger (about 150 μ) in other spp; solitary, in irregular clusters and in radial multiples of 2 or 3; multiples commonly of 4 or more cells present in some spp. Except woods with pronounced pattern or multiples, seldom more than 20 per sq. mm. 5-10 per sq. mm. in some species and fewer than 5 in some spp. Ring-porous or semi-ring-porous in some spp. Spiral thickenings in small vessels of some spp. but rare. Perforations simple. Intervascular pitting alternate, sometimes with some much elongated slit-like pits; small to minute. Pits to ray and wood parenchyma similar typically, but sometimes simple. Tyloses observed. Mean member length 0.2-0.7 mm, mostly 0.33-0.45 mm.

Parenchyma rather scanty to abundant. Apothracheal always present and often predominant; in numerous short bands 1-2 cells wide, and with more numerous and more continuous bands in some specimens; the paratracheal parenchyma more prominent and tending to be aliform in some spp. Terminal parenchyma present in some genera. Frequently with crystals and gum. Strands most commonly of 2-4 cells. Fusiform cells moderately common in many genera. Storied in nearly all spp. except in very small stems.

Rays very variable in type. Some spp. have high rays, more than 5 cells wide, composed mainly of narrow upright cells, with relatively few procumbent cells, which are scattered among the upright cells, and the uniseriate rays are numerous, composed entirely of upright cells, and moderately high (Kribs's Het. Type I). Most spp. that have high rays, these rays contain more numerous procumbent cells, the upright cells are shorter and sometimes almost square, and the uniseriate rays are few, often composed of procumbent cells and commonly only 2-3 cells high (Kribs's Het. Type IIB). In yet other spp. the rays are low, 2-3 and occasionally 4 cells wide, heterogeneous with 1-2 marginal rows of upright cells, with a central part composed entirely of procumbent cells, and storied. Rays 2-3 cells wide in some spp, up to 10-14 in some and 4-9 in some; commonly with tendency to be of 2 distinct sizes in woods with larger rays. Fewer than 5 per mm. in some spp. 6-11 per mm. in others. Markedly heterogeneous; with

square or upright cells intermingled with procumbent cells and tending to alternate in groups in a few specimens; with square or upright cells (other than sheath cells) limited to 1-2 marginal rows in the same spp; with sheath cells in some spp. All rays storied in some spp; with small rays storied in some spp.

Fibres typically with small simple pits. With thin walls in some spp. Commonly storied in woods with storied parenchyma. Mean length 0.36-2-33 mm, usually ^{of} medium length 0.9-1.6 (but sometimes longer) in some spp.

Intercellular canals of the traumatic vertical type reported in spp