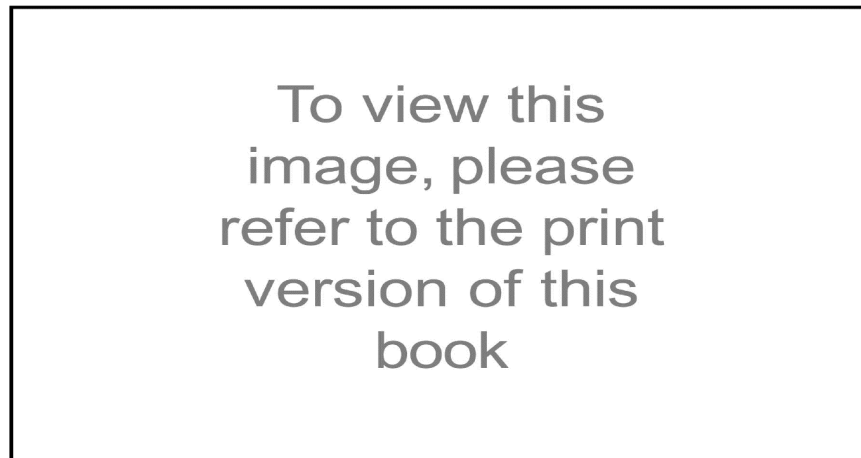


**Fig. 9-2.** *Parts of a wooden propeller.*



**Fig. 9-3.** *Climb comparison.*

### **Controlling Blade Angle**

Fixed force and variable force are the two opposing forces that control blade angle. During operation, a fixed force either tends to increase or decrease blade angle, depending on the particular design. This fixed force can be caused by centrifugal force acting on counterweights, by a spring, or simply by centrifugal twisting moment. Variable force, which causes the blade angle to change by counteracting the fixed force, is actuated by a governor that controls oil pressure on a piston in the propeller dome. The piston is connected to the blades through a mechanical linkage; this linkage converts the linear, hydraulic motion into a rotary motion necessary for changing the blade angle.

In certain McCauley propellers, for instance, oil pressure on a piston is used to increase blade angle. When the governor diverts oil away from the piston, centrifugal twisting moment on the blades and a booster spring in the prop hub cause the blade pitch to decrease. Other systems work just the opposite, but the principle is the same.