

ful study, for it is evident that its members must possess special adaptations for such an aquatic life. What are some of these adaptations? In the first place, we observe that most of them are perennial, and have well-developed rootstock systems in the loose soil below the surface of the water. From the rootstocks arise vertical branches bearing the leaves and flowers. Again, the tissues of such rootstocks are spongy in texture, and contain many air cavities, for some provision must be made for the supply of oxygen requisite for the respiration of the living cells. Moreover, the stems have but little need of mechanical woody tissue on account of the buoyancy of the water, or of cork because the plant is compelled mainly to absorb its food directly through the walls in contact with the water.

The leaves of these aquatic plants are also adapted in many ways to the medium in which they live. The floating leaves are oval or shield-shaped, as is the case with the pond-lilies; while the submerged leaves are either dissected or ribbon-like, as in some pond-weeds, water-milfoils and water butter-cups. Often the under surface of floating leaves is purple to absorb as much of the heat as possible. The arrow-leaves have peculiar arrow-head shaped leaves, but occasionally one finds submerged forms that are grass-like.

The reproduction of these plants is interesting. The flowers are all borne on or above the surface of the water, and the pollen is carried by winds, currents of water, or by insects in the case of conspicuous flowers like the pond-lilies. Moreover, the seeds of most of these plants are able to float on account of the presence of air cavities, and are scattered by currents. Bud propagation also is very common. Special buds containing much food drop off into the mud and develop into new plants the following season.

Further, it will be observed that the intricate net work of upright and horizontal branches at the edge of the water collect silt and entangle fallen dead plants. In a short time the mud accumulates to such an extent that the water becomes sufficiently shallow to allow flags and rushes to develop and oust the former owners. These in turn will give place to joe-pye weeds and willows, and so the struggle goes on for possession of the shallow waters and an extension of the shore.